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Railway Age Gazette

SECOND HALF OF 1917—No. 15

SIXTY-SECOND YEAR

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On Page 11 there is an interesting story of railroad efficiency made possible by
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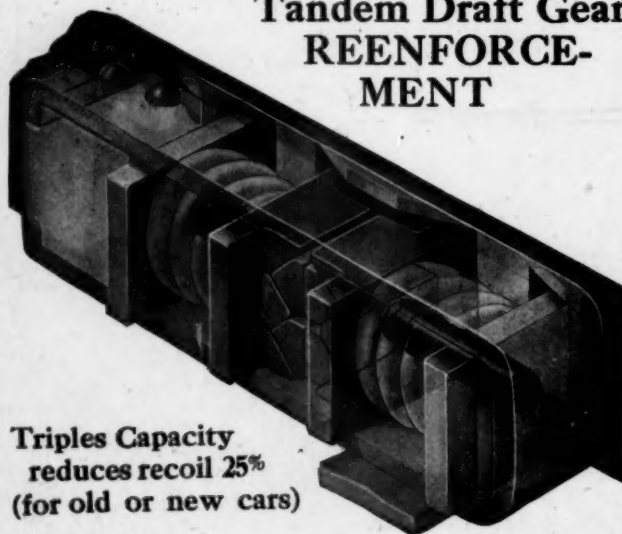
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Railway Age Gazette

Volume 63

October 12, 1917

No. 15

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* Illustrated.

The Erie Railroad, to insure that diffident employees shall not be buried under their own modesty, has invited them to write to their superintendent, recounting their experience and telling him what higher positions they feel qualified to fill; and the letters will be treated as confidential. This is the gist of a circular which has been issued by vice-president A. J. Stone, and which is printed in the Erie Railroad Magazine for October. "What is worth having is worth asking for," and this proposal ought to do some good—though the considerate superintendent will find that he has taken a large contract when he sits down to answer those men whose ability is not commensurate with their ambition. Ever since the sons of Zebedee desired to secure places as Assistant to the General Manager of all the Earth, short-sighted aspirants for promotion have been one of the ever-present peace-destroyers in the life of the tender-hearted employer. As a practical matter, the Erie circular lacks one important element; as important for the interest of the company as for the comfort of ambitious employees. It should ask them to say not only what places they can fill, but also what they could do after, say, a month's or three months' training. Many a bright young station agent or conductor, who would not claim to be able to fill a trainmaster's shoes, would be found to be excellently fitted for such a place if he were ordered to take it, and were properly guided at the start. This question would set such men to thinking.

Would You Like to be Promoted?

"Patient continuance in well-doing" is the homely but scriptural phrase which indicates the only remedy for the costly delays to freight cars which still persist everywhere, in spite of the vast amount of good work that has been done already in speeding up both railroads and consignees. In other words, there must be *men*, numerous enough and persistent enough to ferret out every delayed car, and get the cause of delay removed. No efficiency expert has discovered any new trick. (If any road has female car tracers, all right; "men" embraces the women.) This is one lesson from the address of E. H. DeGroot, Jr., on the freight car situation, delivered before the New England Railroad Club at Boston last Tues-

day; and it is the gist of the opinions of those who discussed the paper. Cars which pile up fifty or a hundred dollars each in demurrage bills are still heard of too frequently. There is no royal road to happiness in such an extensive business as loading, moving and unloading a hundred million tons of freight every month. Mr. DeGroot covered admirably the whole field of freight car service. G. L. Graham, of the American Woolen Company, who took part in the discussion, told of an interesting movement to start "community loading"—all shippers in a Massachusetts city having customers in (for example) Cleveland combining to fill a car for the Ohio city, thus preventing loss of time at transfer stations and avoiding the delays of too infrequent "sailing days."

Many people seem to think that railways should carry soldiers and sailors on their trains free of charge, just as if the railways could give away transportation as the Y. M. C. A. gives away stationery and magazines, the Navy League, sweaters, or those in charge of a tobacco fund, cigars and cigarettes.

One-half Cent a Mile for Soldiers

The only commodity a railway has to sell is transportation, freight and passenger; and there is no more reason why a railway should carry soldiers or sailors free than that a shoemaker should give them their shoes, or a clothier their uniforms, a publisher, their newspapers, or a landlord, their houses free of charge. In fact, some of these clothiers and landlords are doing just the opposite; they are not reducing prices but raising them, overworking, as it were, the law of supply and demand and charging prices much above the average. It is all the more to the credit, therefore, of a railroad that reduces fares for the men in uniform to one-fourth or one-fifth its regular fares. The railroad in this case is the Long Island. It serves Camp Upton, 63 miles from New York, where the drafted men from that city will train for the National Army. The regular round-trip fare to the camp is \$3.54; visitors to the camp will be carried to the camp on special trains at an excursion fare of \$2.50, but on certain of these trains, those best timed for the use of the soldier, there will be a round trip fare for men in uniform of 60 cents. This figures out on the basis of 126 miles at less than one-half cent a mile. The specials will run over

Car Service Discussion at Boston

a busy single track line and on a better schedule than the regular trains and will make but one stop between Camp Upton and Jamaica, where passengers will change from steam to electric equipment.

THE OBLIGATION TO REPORT DISCOURTESIES

THE writer of a communication on a following page concerning courtesy to the traveling public is right in stating that railway passengers as a general rule will not report the discourtesies of railway employees. This statement may, of course, meet with criticism on the part of some passenger traffic men who may have been led to believe by experience that all some of their patrons ever do is to complain; but it is nevertheless true. The average patron either does not like to or does not want to take the time to compose a reasonable letter of criticism, and seldom does he go beyond wondering to what officer he should address such a letter. The railway officer should not forget that a passenger is under no obligation whatsoever to report discourtesies. It may be an act of kindness to report them, but it is no obligation. The obligation is on the railway—to see that its employees give the traveler efficient and courteous service.

The railways, as far as courtesy is concerned, are like other businesses, with the exception that they have a much harder row to hoe. The retail store has its problem in finding out whether its patrons are satisfied, for when a patron is not satisfied, in most cases, he does not complain, he simply does not trade at that store any more. "If you like our service, tell your friends, if you don't, tell us," many of these stores advertise. The retail store has the advantage of having a clerk's sales as a yardstick, as it were, of courtesy. The railway, of course, can have no such measure of efficiency and courtesy. A railway passenger's feelings in most cases cannot affect his purchases of tickets; they affect his friendliness and good-will; and it is these elements that count. The railway might say, "If you like the way we treat you, tell your friends and your representative in the legislature, if not, tell Mr. —, our general passenger agent," or something of the kind.

There are roads that are already doing this. The Bay State Street Railway, in its "Your Street Railway Service," the publication it issues to its patrons, says "Don't growl about the service, even when it is bad—kick. Kick straight to us. Write us letters just as frankly as you please. Call a spade a spade. . . . Don't tell your neighbor how bad the service is, tell us all about it. Give us specific data upon which we can work when we try to make improvements." Perhaps some of the steam railways might work out the same idea, and how could they work it out better than by using their time-tables for the purpose? A couple of well-chosen sentences in one of the spare spaces in the time-table would be just the thing. "Mr. Passenger, we are doing our best to give you first class service. If you are not getting what you should expect, we want to know it; but we can't find it out unless you tell us. Write our Mr. —, he will appreciate your kindness and will take immediate steps to find out what is wrong and to remedy the condition."

But, even so, the point still is that most passengers will not complain of discourtesy and ill-treatment even if they are asked. It cannot all be put up to the passengers. What, then, is the answer? Apparently some roads already have it. First and naturally there must be a one hundred per cent effort to render efficient and courteous service. Second, there must be education and as nearly perfect supervision as possible. Educate the employee that the public must be pleased and to tell the public that the railway is doing its best to please. Supervision should serve as the examination to find whether the course of lessons is being understood and followed by the employees with creditable efficiency. So far

as the public is concerned the average traveler, if he understands the situation, is willing to meet the railway more than half way.

DINING CAR MEALS

A CORRESPONDENT, whose letter is published elsewhere in this issue, thinks a dining car ought to be able to serve a 35 cent breakfast, a 50 cent lunch and a 60 cent dinner, and he points out the fact that he knows of city restaurants that do this. Forgetting for a moment that the kind of food and the class of service in a dining car are comparable not to a cheap restaurant, but to a good hotel where room and bath would be in the neighborhood of \$4 to \$5, let us stop for a moment to see what the dining car costs are compared with a cheap city restaurant. Take overhead costs first. There are no average figures available for the whole country as to how far a dining car has to be hauled to serve a lunch or dinner, but 100 miles is conservative, and two meals a day on the average is all that a great many cars can serve. The expenses per mile of carrying a dining car are rather higher than the average expenses of carrying all-passenger cars. Taking a year when costs were not as high as they are now, the Pennsylvania's passenger train expenses per mile were \$1.475, and the average number of cars in a train were 5.52, so that the average cost per car-mile is 27 cents, or for 100 miles \$27. This allows no rental for the car itself, but simply is the cost of hauling it. The rental of a dining car is about \$25 a day.

Again there are no average figures available for the whole country as to the number of people to whom meals are served at each meal time. On some roads it would be as low as 50 and on other roads more than twice that number. Let us take 75 as the average number. This would be 150 meals per day with a rental charge of \$25 and a haulage charge of \$54, or an overhead charge per meal of 53 cents. Compare this with a down-town Childs restaurant in New York, where there are three floors, each 175 ft. x 50 ft., or 26,250 sq. ft. of floor space, with, say, a rental charge of \$40,000 a year, or approximately \$110 a day. This restaurant serves approximately 8,000 meals a day, so that the overhead charge per meal served is less than 1.4 cents, and yet with such a small overhead charge a breakfast such as is suggested by our correspondent would cost apparently about 40 to 45 cents. A 40 cent breakfast as made up in a New York Childs restaurant consists of a sliced orange, bacon, one egg, potatoes, toast and coffee: ham instead of bacon is 5 cents more. It would be possible to pick out a lunch for 50 cents and a dinner for 60 cents, but not including roast beef or roast chicken with potatoes, dessert and coffee or milk.

Yet a Childs restaurant is run at a profit and most dining car service is operated at a loss, the fact being, of course, that not only are strictly overhead costs of a dining car many times as great as the overhead costs per meal served in an inexpensive city restaurant, but the costs of service, of cooking, of fuel, of ice and everything else incidental to the meal are many times greater for a dining car than for the restaurant. But, as was pointed out at first, this is comparing two very different things. Dining car meals are comparable to the meals served in a hotel like the Statler at Buffalo, Cleveland or Detroit. The Statler at Buffalo has recently inaugurated serving what is called a Liberty Lunch, based on "more vegetables—less meat—one way of helping to win the war." As an example, for 65 cents beef saute, cauliflower in butter, French fried potatoes, creamed spinach, stuffed cucumber and coffee or milk are served. This is served all on one plate with a small helping of each one of the articles named. It would presumably be quite impossible to serve a meal such as this if there was not also to help pay the overhead charges a very large number of meals served from the regular menu, where soup varies from 30 to 40 cents, fish from 60 to 75 cents, where roast beef is 70 cents and French fried potatoes

25 cents, etc. These latter prices compare favorably with the prices on dining cars notwithstanding the fact that even with the Statler or like hotels the overhead charges per meal served are presumably much lower than on a dining car.

About the kind of meals, size of portions, etc., that should be served in a dining car there is an infinite difference of opinion. "What is one man's meat is another man's poison" is an old and homely saying, but no one probably appreciates the full force of it more than does a dining car steward. His task is far harder than that of the head waiter of a good hotel because, as our correspondent points out, there are many people who take meals on a dining car that would not go into the restaurant of a Statler hotel for dinner. The class of service, the prices and all are strange to such travelers. To try to please all of them is an utter impossibility. About the best that can be attempted is for a superintendent of dining car service to set himself an ideal and to try to live up to it himself and to see that each steward of each car is trying to live up to this ideal. To get any agreement on what is good service among the varied patrons of dining cars is an impossibility.

STATE LEGISLATION RELATING TO RAILWAYS

THE state legislative mills have been grinding merrily on during 1917 with their customary activity and the usual variety of grist of railway legislation. The facts are shown in a bulletin just issued by the Special Committee on Relations of Railway Operation to Legislation. The 43 legislatures which have been in session within the year have enacted 140 laws relating to railway operation. This is the largest number of new laws passed in any one year except 1913 of the six years during which the committee has kept the record. In 1913 230 such laws were passed, and in the six years from 1912 a total of 605 laws relating to railway operation were added to the statute books.

Not all the legislative attempts to govern railway operation were successful. In the 1917 sessions of these 43 legislatures 808 bills were introduced, and this number also constitutes a record for the seven years during which records of bills have been kept, except in 1913 and 1915 when 1,395 and 1,097, respectively, were introduced. The total of bills affecting railway operation introduced in the seven years is 4,538. The largest number of laws enacted under any one of the 63 heads under which the committee classifies the result is 12, relating to grade crossings. Nine laws were passed relating to track connections at stations, and the same number were passed relating to the equipment of passenger trains.

The never-wearied activity of labor organizations resulted in the enactment of eight laws relating to service letters, time and manner of payment, and six relating to terms and conditions of employment. There are six new laws relating to separation of grades, six relating to destruction or theft of property and six relating to trespassing. Four relate to the furnishing of cars.

When the new enactments are segregated by states it is made to appear plainly that state regulation of railways is a disease that is apt to manifest itself with increasing virulence as the years pass. The states that in 1917 passed the most laws relating to railway operation are, generally, those that have been the most active in formulating regulatory measures in previous years. For example, Kansas leads the list in the present compilation with 12 laws enacted and ties with Missouri on 54 bills introduced. Missouri redeemed her record by passing only four. California is second with nine passed out of 30 introduced, and Ohio and Maine tie for third place with eight laws passed out of 24 and 18 bills introduced in the respective states. Iowa, with 6 laws from 22 bills introduced, Minnesota with 6 from 46 bills, Montana with 6 from 17 bills, and Oregon with 6 laws from 15 bills, maintain their records of previous years.

Letters to the Editor

IMPACT ON RAILROAD BRIDGES

NEW YORK.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

A reading of A. C. Irwin's letter on "The New Impact Formula" printed in your issue of August 3, gives one a wrong impression as to its utility; and by comparing this formula with the so-called 300 formula on the same basis, the reader is led to conclusions which are incorrect.

30,000

The ————— formula is intended to cover only

$30,000 + L^2$

the effects of impact, true impact and nothing else. The 300

———— formula was originally intended to cover not only $300 + L$

impact but some allowance for secondary stresses, future increase in loading, deterioration and several other factors of ignorance.

Whether it is more desirable to separate these various factors and design bridges by finding all the stresses, primary, secondary and true impact, and then add something for corrosion to the area of members thus required; or to proceed as at present, throwing all the unknown factors into a general factor which in itself is more or less an unknown, is not a matter of discussion. Individual ability and time will determine the use of one or the other.

The new formula has been adopted by the American Railway Engineering Association without the change of unit stresses from the present specification and with two provisions—(1) that the impact shall not be considered to cover the effect of secondary stresses, and (2) the live load used shall be large enough to cover future increase of loading. No such provision is included in the unit stress or impact.

300

As the ————— formula does include an allowance for $300 + L$

secondary stresses, future increase of live load, possible effect of repetition and corrosion, besides impact, it can readily be seen that the formulas are not comparable.

30,000

The ————— formula, if used properly in conjunc-

$30,000 + L^2$

tion with all the other factors, is therefore not easy of application, and moreover does not result in any economy in the weight of steel in bridges, the two reasons given in Mr. Irwin's letter urging its general use.

HERMAN D. HIRSCH,

Assistant Engineer, American Bridge Company.

CHICAGO.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The inability of any one formula to cover all the factors suggested by Mr. Hirsch is apparent and the old formula did not really cover any of them properly, except perhaps the factor of ignorance. Moreover, it has not been used in general as a "cure-all" by designers, nor is there sufficient evidence to show that it was so originally intended.

In 1887 the Pencoyd Iron Works published specifications written by C. C. Schneider, in which the dynamic effect of the live load was allowed for by the formula:

$$I = 0.7 + \frac{5}{L}$$

The addition to the live load given by this formula was

intended to cover not only the dynamic increment, but also an allowance of about 20 per cent of the live load for secondary stresses. This formula was changed about 1894 to:

$$I = 0.1 + \frac{220}{L + 240}$$

because it was thought that too great impact was given by it for long spans, but soon after it was discovered that almost identical values were given by the simpler formula:

$$I = \frac{300}{300 + L}$$

and this was adopted by Mr. Schneider and published in specifications in 1895.

Thus the old "300" formula was obtained from a previous one which was intended to provide about 20 per cent for secondary stresses, by changing it so as to give lower values for long spans. Comparing the first formula with the last one, it is seen that for a span of about 285 ft. the latter provides for 20 per cent less impact than the former and thus the allowance for secondary stress assumed to have been provided in the original formula is wholly wiped out in the last one.

It requires but casual consideration of the fundamental principles governing the determination of secondary stresses to see that neither the old nor the new A. R. E. A. formula can properly provide for these stresses. Secondary stresses are produced by dead load as well as live load and result entirely from the rigidity of the joints. Thus the secondary stresses in a pin-connected truss are limited to the friction on the pins. Secondary stresses are in general proportional to the ratio of the width of a member to its length and theory and experiment show that ordinarily in riveted trusses the end posts and members in the end panels receive the highest secondary stresses. If the old "300" formula provided for secondary stresses, it should give the highest impact for these members, but on the contrary, it provides for a lower impact factor on these members than those near the center of the span. It is thus seen that the factors governing secondary stresses have no relation to the impact formulas under discussion.

Referring to the provisions attributed to the old formula for future increase in loading, it has not been the practice of designers to so credit it,—the increase in future loading being provided for by an excess of design loading over those prevalent at the time. The old and the new A. R. E. A. formulas are comparable because the old one has been used almost exclusively as purely an impact formula just as it is proposed and expected that the new one will be used. The difference, however, is that the old has neither the theoretical nor the experimental foundation which is possessed by the new which is based on the most extensive and trustworthy impact tests ever performed in any country. The new formula should be used because it results in slight economy and because it gives the nearest reflection of the effects of impact that are at present available.

A. C. IRWIN.

DINING CAR MEALS

CHICAGO, ILL.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Breakfast, 35 cents; lunch, 50 cents; dinner, 60 cents; these prices are enough for regular meals in the dining car, but the traveller ought to be able to order from the usual bill of fare if he wishes to. Have the meals announced through the train as follows: 35-cent breakfast now served in diner at the rear (or forward), 50-cent lunch now served, etc., 60-cent dinner now served, etc.

You must admit that a railway journey is an event to a

great many persons, and they like the meals, all but the price. Now, they take their lunches and don't eat in the diner, a great many of them. There is no reason why a diner shouldn't serve good meals for the above prices, and the plan should prove very popular.

For 35 cents they could serve coffee, rolls and fried ham, or coffee, toast and bacon, or sausage, wheat cakes, honey and coffee.

For 50-cent lunch they could serve hungarian goulash or fish, coffee, ice cream or pudding.

For 60-cent dinner they could serve roast beef or roast chicken or fish, coffee, tea or milk, potatoes, pie, ice cream or pudding.

Personally, I know of a good many city restaurants who serve these kind of meals for less money and they are good substantial meals also. A diner buys in large quantities and is always near a market. It should be able to purchase as cheaply as a city restaurant. At these prices a diner should make more money than it now does. Fewer people would carry their lunches.

The United States Navy buys in large quantities, and each battleship stores enough food for three months. It costs the government 45 cents a day, or 15 cents a meal, to feed a sailor. A diner should be able to almost duplicate this cost.

J. A. DEAN.

PASSENGERS WILL NOT REPORT DISCOURTESIES

NEW YORK.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I have read with a great deal of interest your editorial entitled "The Courtesy Killer," in the issue of September 14, and fully agree with all said therein as far as it goes, but it strikes me that you should have gone a step further.

Surely, the carriers have made, and are making, most strenuous efforts to educate their employees on the courtesy question. I have seen in many stations and offices neatly framed posters containing masterly written exhortations to be courteous under any and all circumstances. The same thing has been conveyed to employees in circulars time and again, but how is the company to know whether these instructions are being complied with?

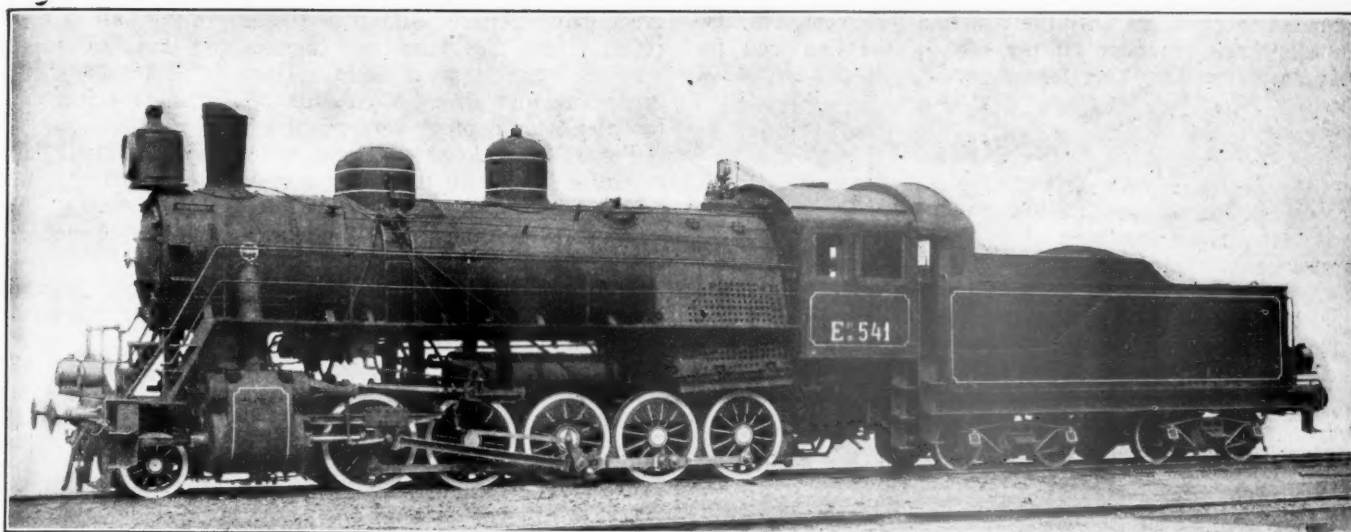
Take the case you cited: This would-be passenger evidently went about telling all his friends about the discourteous treatment he had received, probably damning the road and everybody connected with it, whereas it would have been an act of kindness to other would-be passengers and to the railroad if he had reported the case promptly to headquarters so as to enable the officers to apply the necessary discipline.

Unfortunately, as a general rule, people either won't be bothered to report a case of this kind or they don't have the moral courage to do so, with the result that the discourteous agent will continue in his position to the detriment of the road and discomfort of would-be passengers.

I know from experience that the carriers always appreciate this much needed co-operation on the part of the public, and any one with average common sense can judge in which instance it is wise and proper to report a case or when to keep quiet. But to go about complaining to outsiders instead of reporting to headquarters is utterly wrong in principle and does not benefit or help anyone.

TRAVELER.

OIL FUEL IN COSTA RICA.—The Costa Rican railways are finding the use of oil fuel continuously successful. The Costa Rican Railway Company has expended the sum of £40,000 (\$194,400) upon a new installation for the use of oil fuel in the place of coal.



Decapod Type Locomotive for the Russian Government.

Decapod Locomotives for Russian Government

A Notable Order Consisting of 1,231 Heavy Locomotives, Built for a Foreign Country by American Builders

ONE of Russia's most imperative needs is increased transportation facilities. Additional motive power and rolling stock are urgently required, and American manufacturers are furnishing locomotives and cars in large numbers, as rapidly as facilities will permit. Since the summer of 1914 the total number of heavy freight locomotives ordered by the Russian Government railways from the Baldwin Locomotive Works and the American Locomotive Company is 1231, the former company furnishing 725 and the latter 506. These locomotives probably constitute the most notable group of heavy power ever shipped by American locomotive builders to a foreign country. Those last ordered will be completed during the year 1918. In addition, 50 locomotives of similar type have been supplied by the Canadian Locomotive Company.

The design and construction of these locomotives were under the direction of A. I. Lipetz, chief of the locomotive division of the Russian Mission on Ways of Communication in this country. They have been built on a number of different orders; but, although the later engines present various changes in details, as compared with those first constructed, the locomotives are all of the same general design and hauling capacity. The wheel arrangement is 2-10-0, and the tractive force exerted is 51,500 lb. The maximum load per driving axle is limited to 16½ metric tons. The locomotives are designed to operate on curves of 700 ft. radius on the main line and 350 ft. on sidings, and to handle 1,300 metric tons up a grade of 0.8 per cent, at a speed of 8 to 10 m. p. h. They have ample capacity for doing this, while working at a fairly economical cut-off.

The locomotives now being built by both the Baldwin Locomotive Works and the American Locomotive Company are identical in construction. In general design they follow American practice, although many of the details are in accordance with Russian standards. The Russian engine crews can, therefore, handle them without difficulty.

The boiler is of the straight top type, with a wide firebox which is placed above the rear pair of driving wheels. The boiler center is placed 10 ft. above the rail, and this allows ample room for a deep throat, and for the installation of a Security sectional arch supported on water-tubes. The fire-

box is radially stayed, and a total of 462 flexible stays are used in the water legs. Of these, 286 are placed in the sides; 84 in the backhead and 92 in the throat. In addition, four transverse rows of expansion stays support the front end of the crown and one row is used at the back.

The equipment of hand-holes and wash-out plugs is unusually complete; and a man-hole, 15½-in. in diameter, is placed on the round of the boiler on the left hand side, just forward of the firebox. The dome is of the built-up type, with an inside diameter of 30 in. Three safety valves are provided, one of these being mounted on the dome cap, and the other two on a specially designed turret, placed over the firebox and immediately in front of the cab. Two whistles are also mounted on this turret, and the rigging is so arranged that one of them can be blown from the train, by means of an outside cord connection.

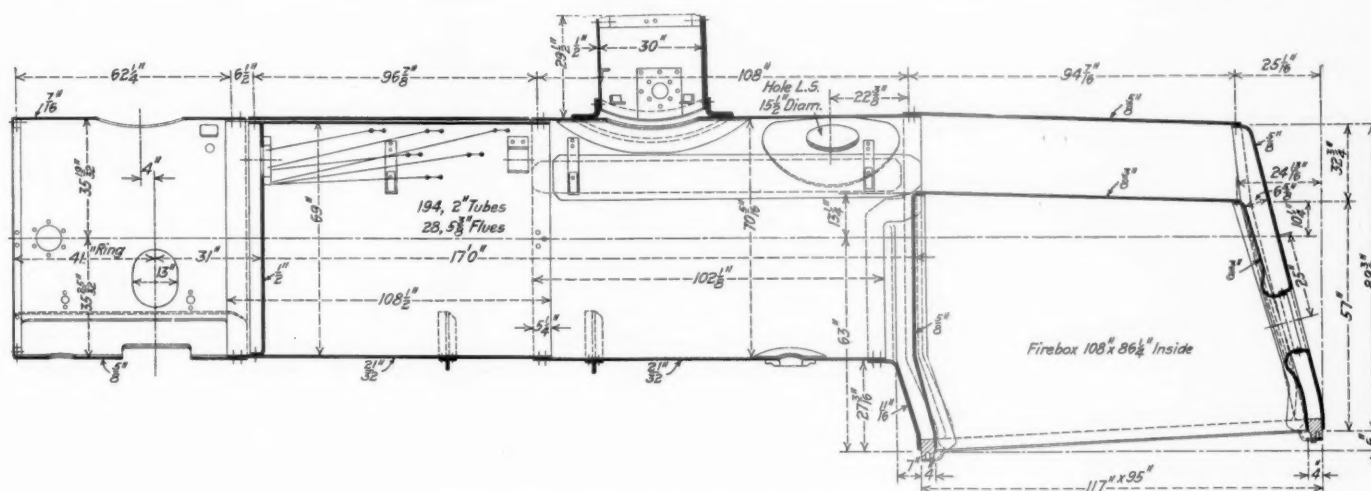
The throttle valve is of the sliding type, in accordance with Russian practice, with a small auxiliary valve which opens first, facilitating the opening of the large valve and this same small valve is used when drifting on engines which have no by-pass valves. It has outside connections with the lever in the cab and is arranged to open with a downward movement of the slide. There are two ports in the vertical throttle-pipe, and they are tapered in width, so that a very small opening can be obtained. Springs are provided to assist in holding the slide against its seat.

These locomotives use superheated steam, and are equipped with a 28-element fire-tube type superheater. The superheater damper is arranged with several openings, which are placed in the front wall of the box enclosing the header. This construction replaces the single damper opening in the bottom of the box, which is ordinarily used in American locomotives. The cylinders are of the two-piece type, designed in accordance with American practice. The steam distribution is controlled by 12-in. piston valves. These are fitted, at each end, with light cast steel heads and spiders, between which is placed a cast-iron bull ring. The heads and spiders are mounted on the valve stem, which is extended through the front head. The packing rings and steam chest bushings are of gun-iron. The Walschaert valve gear is applied, in combination with a screw reverse mechanism of Russian

type. The pistons are of rolled steel, with extended piston rods, and the crossheads are light steel castings sliding on single bar guides. The back end of the main rod is fitted with a forked stub of Russian design. A steel filling piece is slipped over the fork between the brass and the key and this filling piece is fitted with a lug through which pass the two key adjusting bolts.

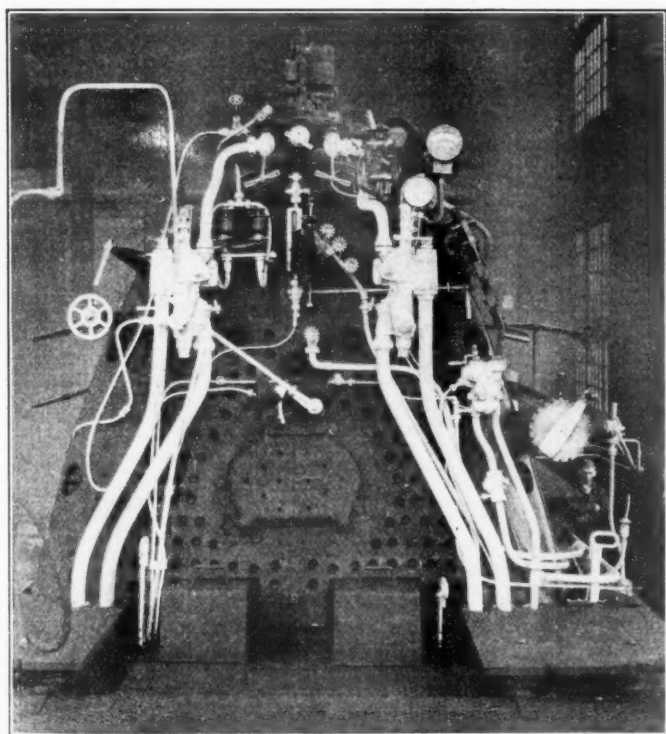
Some of these locomotives are equipped with the Zymbloff

tion between the two ends of the cylinder. Another device of special interest is the Shukaloff drifting or vacuum relief valve, which is used in conjunction with the Zyabloff by-pass valves. This valve communicates with the superheated steam section in the smoke-box header. When the engine is using steam, the pressure forces the valve down and holds it shut. When, however, the engine is drifting and a vacuum is created in the steam passages, the valve rises from its seat and



Boiler Elevation of the Russian Locomotives

by-pass valve. This device is arranged with a pipe connection 4 in. in diameter, which communicates with the steam ports at each end of the cylinder. In the center of this connection is placed a vertical plunger, formed in one piece with two pistons. When the throttle is open, steam acts on the



Back Boiler Head of the Russian Locomotives with the Cab
Removed

power piston, pushing the plunger up against a spring, and closing communication through the pipe connection. When the throttle is closed, and the steam pressure is relieved, the spring forces the plunger down, and there is free communica-

air is admitted through a suitable strainer. At the same time, a pipe connection is opened, through which a small quantity of saturated steam is admitted to the superheater header, and thence to the cylinders. This assists in breaking the vacuum and in keeping the valves and pistons properly lubricated.

The exhaust opening is variable and is worked, through suitable connections, by means of a hand-wheel placed in the cab. The exhaust nozzle contains a hollow frustum of a cone, which can be raised or lowered. When in its top position, all the exhaust steam passes out through the interior of the frustum; and when it is lowered, an annular opening around the frustum is provided in addition.

The frames are vanadium steel castings, 4½ in. in width, and placed 43 in. between centers. The equalizing rigging is anchored to the frames between the third and fourth pairs of drivers, but is so arranged that, if desired, it can be changed and anchored between the second and third pairs. The leading truck is equipped with three point suspension links, and is equalized with the drivers in the usual manner.

The driving-wheel centers are turned to metric measurements, and the tire widths and transverse spacing also conform to the metric system. The wheels are designed to balance approximately 45 per cent of the weight of the reciprocating parts. The driving tires are shrunk on the centers, and are held by set screws and retaining rings in addition to the usual shoulder. The tires of the third, or main pair of wheels, are flangeless.

The front bumper is of steel built up, and screw couplings and spring buffers are applied in accordance with Russian railway practice. Two large signal lamps are placed on the front bumper when running forward and at the rear end of the tender when running backward, while the headlight is mounted on top of the smoke box.

Included in the equipment of these locomotives, are Russian-Westinghouse automatic air brakes, LeChatelier cylinder water brakes, electro-pyrometer for indicating superheated steam temperatures, and a six-feed mechanical lubricator. The injectors are of the Russian vertical type, and are mounted on the back head. In connection with them, sprinklers are applied for the ash-pan, smoke-box and cab deck. Power-operated fire-doors have been applied to a

Railway Fire Protection Association Meets

Reports on Fire Prevention as Related to Explosives, Electrical Hazards and Storage of Pulverized Coal

THE fourth annual convention of the Railway Fire Protection Association was held at St. Louis, Mo., from October 2 to 4, inclusive. B. S. Mace, superintendent of insurance of the Baltimore & Ohio, and vice-president of the association, occupied the chair in the absence of P. Hevener, the president, who is now a first lieutenant in the National Army. The attendance was somewhat below that of last year, but the secretary reported an increase in total membership from 95 to 113. Mr. Mace was elected president for the coming year, Robert Scott, superintendent of insurance of the Atlantic Coast Line, was elected vice-president, and G. L. Ball, superintendent of insurance of the St. Louis-San Francisco, was made secretary-treasurer. The following new members of the executive committee were elected: P. Hevener, superintendent of the insurance department of the Chicago, Rock Island & Pacific, and now in the army on leave of absence; W. F. Hickey, superintendent of insurance of the New York, New Haven & Hartford; C. N. Rambo, of the Norfolk & Western, and E. W. Osborne, insurance inspector of the Northern Pacific.

Resolutions offered by the Committee on Resolutions, C. N. Rambo, chairman, emphasizing the importance of continued and increased attention to fire protective measures were unanimously adopted by the association and will be sent to the presidents of all the railroads in the country.

EXPLOSIVES AND OTHER DANGEROUS ARTICLES

The report of the Committee on Explosives and Other Dangerous Articles, W. S. Topping, Bureau of Explosives, chairman, is abstracted below:

For the period from 1907 to and including June, 1917, the total number of explosions occurring in the transportation of dynamite alone amounted to a total of 27 resulting in the death of 10 persons and the injury of 35 others, and a total property loss of \$611,244. The causes have been segregated and we find that of the total of 27 accidents six were chargeable to failure of railway employees to remove or isolate shipments before they were reached by fire originating through other sources. Five accidents were due to failure of the carrier to enforce prompt removal by the consignee, or to otherwise dispose of shipments of high explosives. Three were due to concealed shipments of high explosives in trunks or in household goods shipped by miners. In two instances explosions were due to fire consuming cars of explosives, the origin of the fires being due to defective car roofs and caused by sparks lodging thereon. In two other instances cars of explosives were involved in derailments.

Our records also show that the following causes are each responsible for an accident:

1. Leaking cases loaded without staying end on end.
2. The placing of a car of high explosives next to a car placarded "Inflammable" and alongside a cinder bank.
3. Failure to place car in center of train, and improperly placing car between tank car and car of rails.
4. Failure to inspect or properly prepare car, draft bolt being replaced and not covered with wood.
5. Failure of brakeman to adjust switch, which derailed the car.
6. Failure to enforce prompt removal by consignee at a non-agency station and storing shipment in shed.
7. Spontaneous decomposition of unsafe explosives not passed upon by the Bureau of Explosives and failure promptly to dispose of a leaking astray shipment.
8. Careless handling, permitting case to fall under car.
9. Intentional explosion by a criminal.

BLACK POWDER

Black powder is usually shipped in metal kegs and under the regulations these kegs are so loaded and stayed as to

prevent movement in ordinary transportation, but the shocks cars receive incident to switching and yard movement sometimes have the effect of breaking down the staying and of permitting the kegs to roll over the car floor, and our records show many instances wherein these kegs have been ruptured and grains of powder spilled on the floor. In not all of these instances, however, has an explosion occurred because of the care exercised by railway employees upon discovery of these bad conditions. It goes without saying that the proper place for explosives is in their containers and not strewn over a car or warehouse floor.

Black powder is much easier of ignition than is dynamite or smokeless powder and when the leaking grains of powder are ignited, even though the ignition of these grains may occur some distance away from the kegs of powder, there is a grave possibility of the ignition communicating to the entire shipment. The ignition of black powder may easily occur through a spark made by contact between metal surfaces, or a flame from a lighted torch. A lighted hand lantern while not the safest sort of light to use around black powder, probably would not cause trouble.

For the period from 1907 to and including June, 1917, the total number of explosions occurring in the transportation of black powder amounted to a total of 18, resulting in the death of 38 persons and the injury of 78 others, and a total property loss of \$125,723. The causes have been segregated and we find that of the total of 18 accidents three were due to derailments, two were chargeable to the concealment in articles of baggage, while the remainder were due to lightning, sparks, leakage, carelessness in loading, failure to keep tramps away, a rear end collision, impact with another car in switching, etc.

OTHER DANGEROUS ARTICLES

In the year 1916 there were 536 accidents connected with the handling of acids, which resulted in the injury of 35 persons and a property loss to the carriers of about \$75,000. Of the various kinds of acids handled, the most dangerous in transportation are nitric acid or mixed nitric acid and sulphuric acid. Either of these acids will cause fires when in contact with combustible material. The use of glass containers for the shipment of nitric acid undoubtedly is the cause of practically all of the fires, taking into consideration the failure of shippers properly to prepare their packages, rough handling on the part of carriers and failure of carriers' employees to exercise proper supervision over the acceptance and loading of such shipments.

Of the other dangerous articles the greatest hazard is in connection with the movement and handling of inflammable liquids. Under the regulations an inflammable liquid is one that has a flash point at or below 80 deg. F., which means that at a temperature of 80 deg. F. or below the liquid gives off inflammable vapors that will ignite on contact with flame. In 1916 70 serious accidents occurred in the handling of gasoline, and cost the carriers \$137,860 and we find that the cause of these accidents was:

1. Derailments and ignition of vapors or liquid by sparks produced by contact of metal surfaces.
2. Ignition by trainmen's lanterns.
3. Draining of automobiles in cars or on platforms; ignition of the liquid or vapors by lighted matches or lanterns.

1917 TROUBLES

The record so far compiled for this year shows a repetition of careless acts on the part of railway employees and shows

many accidents and fires that could have been avoided by the exercise of proper care and attention to details. Inflammable liquids in tank cars seem to have been involved in fires of considerable frequency. But as stated before, derailments were in many instances the contributing causes. In handling derailed tank cars fires have occurred due to failure of employees to act with extreme care and observe well-known precautions. Other tank car fires were due to failure on the part of railway employees to prevent ignition of leaking gasoline between the tracks. Two serious fires were caused by disobedience of rules with respect to removal of dome covers while contents of tank cars were known to be under pressure.

PUT OUT THE FIRES BEFORE THEY GET BEYOND CONTROL

When fires occur in connection with the transportation or storage of explosives or other dangerous articles, the one important thing to do is to stop the fire in its early stage, and for this purpose qualified and well-trained employees are essential. The best manner of extinguishing these fires depends upon the immediate existing local conditions. Fires caused by nitric acid or mixed nitric and sulphuric acids can be controlled by the careful use of water. In the application of water care must be exercised as in contact with acid it is liable to cause slight explosions, accompanied by the projection of hot acid, which may cause dangerous burns. Therefore, the water should be applied from a safe distance. Sand may also be used to stop a fire started by acid, but if the fire has thus been stopped, the early use of water is desirable to prevent the fire breaking out again. Thoroughly flush away any remaining acid and remove leaking or damaged containers. In all fires caused by nitric or mixed acids, a considerable amount of nitrous fumes will be given off; these fumes are extremely irritating and are poisonous. Employees should not enter a car or other confined space where such fumes are present.

Fire in a case of friction (strike anywhere) matches frequently involves ignition of the match heads in one or more of the inside cartons. If the outside box is not broken open and the smoke dies away after a moment or two, no further action is necessary, as the fire has already been extinguished for want of oxygen, and nothing will be gained by opening the box. If the fire has gained some headway, the burning box or boxes should be removed from the car or warehouse if this is possible; or water should be freely used. Boxes should not be broken open, as the fire will be increased by such action.

Fires in ground charcoal or in charcoal screenings are best handled in removing the burning packages (usually bags). If conditions are such that removal is not possible, water may be used sparingly to extinguish the visible fire; then remove all of the charcoal and separate the wet from the dry charcoal. The dry charcoal should be stored under cover and under observation for several days before permitting such a shipment to move forward, as it is probable that fire may burst out again. The wet charcoal should be destroyed as it is unsafe to transport. Fires in lump charcoal should be extinguished with as little water as possible and the wet charcoal removed from the balance of the lading. The same precautions as to observation for several days should be followed to see that fire does not again occur.

Fires which involve only a small amount of gasoline can often be extinguished by the liberal use of water, but if there is a large amount of gasoline already ignited, water will only spread the fire. Sand or earth should be used to control the flames of the burning gasoline, and could possibly be used in sufficient quantity to smother the fire.

Fires involving tank cars may occur through ignition of the vapors escaping from a safety valve. The burning of these vapors and even of the liquid itself is not a serious matter except as a source of trouble to surrounding prop-

erty. An effort should be made promptly to extinguish such fires by the use of wet bagging thrown over the safety valve, pouring sand in quantity on top, or if the means are available, by the use of a heavy jet of steam. If this cannot be done, isolation is the proper course to pursue, and the fire will eventually burn itself out.

Carbon tetrachloride, the basis of many of the various chemical fire extinguishers, if thrown on an oil fire forms a heavy non-inflammable vapor over the liquid, and mixes readily with oils. The vapor is about five times as heavy as air, and although the fumes from carbon tetrachloride are pungent, brief exposure to them does not cause permanent injury. The efficacy of carbon tetrachloride depends largely on the skill of the user.

Sawdust may be used by means of long-handled shovels, in extinguishing fires involving open tanks. The sawdust is not easily ignited, but floats on the surface forming a blanket which will exclude the oxygen of the air.

Fires in sulphur are best extinguished with water, or if discovered at the start the burning portion may be removed. Sulphur does not burn rapidly nor will the fire spread rapidly. After a fire is apparently extinguished the shipment should be kept under observation, as owing to the low ignition temperature fire may burst out again. The fumes are suffocating and should be avoided by employees.

Nitrate of soda is not easily ignitable, but when intimately mixed with organic matter, such as jute bagging, is liable to cause serious trouble if ignited. The melted nitrate retains a great deal of heat and when water is thrown on it the sudden generation of steam will cause the melted nitrate to scatter and start fresh fire. Whenever practicable, fires in shipments of nitrate of soda should be smothered immediately, as they are difficult to extinguish with water after gaining any headway.

Leaking or damaged cases containing bromine require careful attention in order to avoid fire and, particularly, personal injuries. Fumes of bromine may be neutralized and settled by using ammonia water or household ammonia sprayed through a sprinkler or watering pot. Sufficient ammonia should be sprinkled to counteract the bromine fumes, and the box and packing saturated with the bromine should be saturated with sufficient ammonia so that the odor of ammonia becomes more noticeable than the bromine. After neutralizing the bromine, the broken or leaking bottles can be removed from the cases.

The Bureau of Explosives early took hold of the question of properly constructed cylinders for acetylene and very exhaustive tests were conducted. Finally, with the active co-operation of the acetylene industry, the bureau developed its regulations so that the hazard of transportation has become negligible, and thus the cylinders are now so safeguarded that the widespread use throughout the country, so far as approved cylinders are concerned, is not accompanied by undue hazards. As regards the oxygen cylinder, the bureau has made more and more rigorous regulations, developed systems of inspection and test, including permanent records so that the oxygen cylinder with its 1,800 lb. pressure to the square inch goes through the vicissitudes of transportation and the use of half a billion feet of oxygen per annum and is not accompanied with accidents attributable to cylinder failure.

FIRE PREVENTION AND PROTECTION IN RAILROAD YARDS

The committee on Fire Prevention and Protection in Terminal, Classification and Storage Yards, F. A. Greene, Pennsylvania Railroad, chairman, was approved. The committee, however, was requested to continue its investigation of the subject and to make a final report at the next meeting. An abstract of the report follows:

PREVENTION

Preventive measures may generally be included under the phrase "careful housekeeping." All hay, straw, rubbish, paper, etc., should be removed and the doors of wooden box cars should be kept closed; grass, weeds and undergrowth should be kept out, and rubbish should not be allowed to accumulate in yards or near storage tracks and suitable incinerators should be provided, especially where car cleaning is done. Definite arrangements should be made for the disposition of trash. Cars should not be stored near hazardous risks, such as wooden grain elevators, warehouses, etc., or where exposed by the burning of adjacent property. Dead end tracks should be avoided as far as possible.

The watchman's service is important and should consist of regular tours of the entire yard both day and night, registering on approved portable watchmen's clocks from stations distributed throughout the yard recording at each station at least every two hours and at some station every 30 minutes. There should be a watchman for each 1,000 cars and in the selection for this service preference should be given to young able-bodied men with sight, hearing and sense of smell unimpaired. His duties would be to keep out trespassers, to close or have closed all car doors, to report dirty conditions in yard, engines throwing sparks, and he should be well informed as to the location of all fire appliances, fire alarm boxes, etc.

PROTECTION

Two factors to be considered in determining the outlay warranted are the number of men that are available to handle equipment and the ratio of the cost to the average value at risk.

The most economical and efficient method of protecting classification and storage yards is by equipping all shifting engines with fire extinguishing apparatus. There are several types of such apparatus on the market, all working on the general principle of syphoning the water from the engine tank by means of a steam jet, any one of which is capable of throwing a very satisfactory fire stream.

The great advantage of shifting engines equipped with fire extinguishing apparatus for the protection of yards is that they are readily moved to the fire and are ordinarily well distributed throughout the yard, so that at least one engine can be brought into service at any point promptly. In the hands of a proper organization shifting engines equipped with fire extinguishing apparatus can render almost as efficient service as water lines and fire hydrants. Two non-freezing type "listed" chemical extinguishers of the 2½-gal. size with shoulder strap attachments may be added to the engine equipment to good advantage.

In order to obtain the greatest efficiency from shifting engines equipped with fire extinguishing apparatus, a fire brigade organization should be formed in each yard or district and special instructions should be issued by the division superintendent and posted on the bulletin boards in the district covered and in such other places as may be necessary. These instructions should designate an employee, usually the yardmaster, to assume general charge of the operations of the engines to insure that they are given right of way through the yard in case of fire. The conductor of each crew should be held responsible for his own crew and the members of each crew should be assigned specific duties, such as first brakeman—laying of hose lines and assisting at nozzle; second brakeman—coupling of hose and assisting at nozzle; fireman—coupling hose to locomotive extinguisher and assisting engine man; engine man—care and operation of fire extinguisher. Suitable fire signals should be arranged for calling shifting engines or other assistance. Fire drills should be held every two weeks and reports made to the superintendent; water, however, should not be turned on during freezing weather.

HAND FIRE EQUIPMENT

For the further protection of yards, it is recommended that 2½-gal. chemical extinguishers be distributed in all heated yard buildings, such as scale offices, switch houses, etc., and that employees be designated to handle these extinguishers in the event of fire. In larger yards, it is also recommended that one or more 40-gal. chemical engines of the upset type be provided and a sufficient fire brigade organization formed to bring them into service.

WATER MAINS AND FIRE HYDRANTS

This type of protection is the most expensive to install and before recommending its installation a careful estimate should be prepared of the cost to determine if the values subject to risk from one fire are sufficient to warrant the expenditure. In this connection it should be remembered that while the aggregate values in yards are very large, nevertheless they cannot be considered subject to a single loss, as it is possible with efficient shifting service to remove the cars and prevent a general conflagration.

FIRE BRIGADE

The importance of a well trained fire brigade cannot be over-estimated particularly at points isolated or inaccessible to city fire protection. Frequently in laying out systems of fire protection, the fire brigade fails to receive the consideration which its importance deserves and fire pumps and distribution systems, however perfect, will prove of little value if the means are neglected by which their possibilities are to be realized.

In organizing a private fire brigade the use of the pamphlet on "Private Fire Brigades," issued by the National Fire Protection Association, is recommended.

SIGNALING SYSTEMS

The installation of approved fire alarm systems to cover wide areas, such as classification and storage yards, involves considerable expense and is warranted only where complete systems of water mains and hydrants are installed and a fire brigade organization is maintained. Under ordinary conditions, it is believed that the yard telephone service used in connection with the whistle alarms sounded by shifting engines or from the power plant will fully meet the requirements.

CITY PROTECTION

In most yards on account of inaccessibility, the efficiency of outside fire protection will be more or less reduced. It is important, therefore, that wherever public or volunteer fire departments are located within a reasonable distance of a yard care be exercised to maintain the roadways in good condition at all times. It is also advisable wherever possible to have a city fire alarm box or an auxiliary box located on the premises, otherwise the telephone number of the nearest city fire company should be shown on the fire alarm code.

PROTECTION OF WHARVES AND PIERS

W. F. Hickey, chairman of the Committee on Wharves and Piers, read a report which emphasized the great vulnerability to fire of most of the piers and wharves of the country and urged (1), fireproof construction of piers and wharves; (2), proper care and protection by officials and employees; (3), the provision of all means of extinguishing fires possible. He stated that at the present time extraordinary precautions were vitally necessary on account of the large amount of business being handled on wharves and piers, the danger of congestion and the nature of the traffic handled, which include considerable quantities of munitions. He recommended that the water end of piers and the bulkhead which abuts on the water front be guarded rigidly day and night with frequent watchmen clock records as that is the most likely place of attack for incendiarism by an alien

enemy. The work of this committee was continued with a request that it file a final report at the next meeting.

HAZARDS IN THE STORAGE OF PULVERIZED COAL

C. P. Beistle, chemist of the Bureau of Explosives, read a paper on Hazards in Connection with the Storage of Pulverized Coal, a liberal abstract of which follows:

In the development of the use of pulverized coal, together with many advantages and economies, there has appeared a certain hazard in handling and storage. This hazard under proper conditions is not severe, but should be recognized and provided against in designing and operating equipment. The hazards of pulverized coal are of two kinds. First: the hazard of spontaneous ignition, and second: the explosion hazard.

SPONTANEOUS IGNITION

It has long been known that spontaneous ignition takes place at times in the storage of bituminous coal. Observations of numerous fires in coal in storage and shipment show that the fires originate in coal in large bulk, preferably in the fine or slack coal, and that the spontaneous heating is apparently stimulated by moisture. It is also generally found that fires are more liable to originate spontaneously in coal containing comparatively large amounts of sulphur.

Closer investigation shows that freshly mined bituminous coal when exposed to air starts to absorb oxygen immediately. This oxygen at first combines directly with unsaturated compounds in the coal, and in so doing causes some increase in temperature. As the temperature increases the rate of oxygen absorption also increases, and after the temperature reaches a certain critical point carbon dioxide and water are given. If the conditions are favorable this process may extend to the point of ignition.

As the process initially depends on the action of atmospheric oxygen on the coal, this action will take place only on the surface of the coal. The ratio of the surface to the mass is enormously increased as the size of the individual particles is decreased. Consequently the finer the state of division of the coal, the more rapid the spontaneous oxidation, and the more rapid the consequent development of heat.

The absorption of oxygen by the coal, although taking place at any temperature, increases as the temperature increases; hence spontaneous heating is more likely to occur if the coal is at a high temperature to start with.

In preparing pulverized coal for use the coal is first dried and then ground. This drying is accomplished by direct heating, and is necessary to get the fine and uniform grinding required for the proper use of the fuel. The coal after passing through the dryer is pulverized while still hot or warm. As the drying and fine grinding are essential to the preparation of the fuel, the logical precaution is to carry on the drying process at as low a temperature as practicable. This not only tends to reduce the chances of spontaneous ignition, but also prevents the direct ignition of the coal in the dryer, which sometimes happens. The efficiency of the drying process need not be lowered materially by the use of lower temperatures, as the rapidity of drying depends not only on the temperature, but also on the rapidity with which the air current passes over the material being dried. It should, therefore, be the aim to get the drying done at comparatively low temperatures and with the use of a strong draught through the dryer. The temperature of the coal coming from the dryer should not exceed 150 deg. F.

The pulverized coal should be stored in metal bins or receptacles sufficiently tight to prevent circulation of air or the entrance of moisture. The amount of pulverized coal kept in storage should be as small as is practical, considering the daily consumption: the reserve of fuel should be stored in the lump condition and not as pulverized coal. In case pulverized coal ignites spontaneously, or from any other

cause, it burns slowly with smouldering combustion, and if kept in tight metal bins is not liable to cause much loss. Fires occurring in this way should be extinguished by washing out the contents of the bin with a stream of water.

In common with other combustible dusts, such as flour, elevator dust, etc., under certain conditions coal dust or pulverized coal is capable of producing violent explosions. This explosive action can take place only when the dust is suspended in the air, and then it requires the contact of a spark or flame for ignition.

Coal dust suspended in the air has somewhat the same risks of fire and explosion as the vapors of inflammable liquids, and much the same precautions must be used to prevent escape of dust clouds into the atmosphere as is taken to prevent escape of inflammable vapors.

Storage bins, dryers, pulverizers and conveyors should be tight to prevent the escape of the pulverized coal into the atmosphere. Coal dust should not be allowed to accumulate on exposed surfaces inside of buildings or in other places where by any means it may be thrown into the air to form a dust cloud.

No lights other than incandescent electric lights provided with heavy guards should be permitted in places where pulverized coal is being prepared, handled or stored. Fires, matches, lanterns or torches should not be permitted in or around pulverizing mills or storage bins.

The inflammability of pulverized coal depends on the proportion of volatile matter in the coal and, therefore, bituminous coal is more dangerous in this respect than anthracite coal, and lignites are more dangerous than bituminous coal. While pulverized anthracite coal is not liable to spontaneous ignition and is less liable to produce dust explosions than other coal, the coal commonly pulverized for use as fuel is bituminous coal or lignite, as pulverized anthracite coal has not yet been successfully applied as a fuel, except when mixed with softer coal.

ELECTRICAL HAZARDS

The report of the Committee on Electrical Hazards, T. S. Potts, Cincinnati, Hamilton & Dayton, chairman, was accepted. The report included proposed instruction cards designed to reduce the fire hazards of electric light and motor installations by giving instructions as to their proper maintenance and operation.

STATISTICAL REPORT OF FIRE LOSSES

E. B. Berry, chief insurance inspector of the Southern Railway, read a report on statistics of fire losses during 1916, which follows in part:

Forty-nine railroads, representing 120,805 miles, reported 5,077 fires in 1916, with a loss of \$4,677,374, an increase of 16 2-3 per cent in the number of fires and 74 4-10 per cent in losses over the previous year. The average loss per fire increased from \$55 to \$921, or 66 per cent, and loss per mile of road increased from \$23.62 to \$38.71, or 64 per cent.

As in previous years, 77 per cent of the entire loss was caused by the six prolific fire breeders:

	Per cent.
Defective electric wiring.....	14
Friction, hot boxes, etc.....	19
Locomotive sparks.....	9
Spontaneous combustion.....	8
Wrecks.....	6
Unknown.....	21

The property loss was divided as follows:

	Per cent.
Elevators.....	30
Rolling stock.....	20
Miscellaneous station buildings.....	12
Merchandise in transit.....	8
Shop property.....	6

The heavy loss in elevator buildings is attributed to the unsettled conditions of the country, and demonstrates the absolute need of thorough and competent watch and patrol service.

The rolling stock risk shows an increased loss of \$226,259 over last year; while a large percentage of the loss is due to the destruction of cars by fire at industrial plants, the psychology of the conditions causing heavy loss in elevator property should act inversely with respect to rolling stock.

Merchandise in transit reporting an increase loss of \$111,632 is accounted for by the very great increase in tonnage handled by the carrier with a very much higher value per ton unit. The loss ratio based on destructible value of the risk is in all probability lower than the past year.

HOSE AND HOSE COUPLINGS

The report of the Committee on Hose and Hose Couplings, F. H. Elmore, Southern Railway, chairman, was accepted. Briefly, it recommended the following:

1. Cotton rubber lined hose where exposed to moisture and rough usage.

Use 2½-in. hose where water pressure and volume and force for handling sufficient.

Use 2-in. and 1½-in. hose where volume and pressure reduced. Nozzle outlets reduced commensurately.

Single jacketed hose, except where severity of service demands double jacketed.

3. Purchase hose with underwriters' specifications and with a five year guarantee of service.

4. (a) Factory test of hose.

(b) Regular service in drills.

(c) Optional periodical test at minimum pressure of 125 lb.

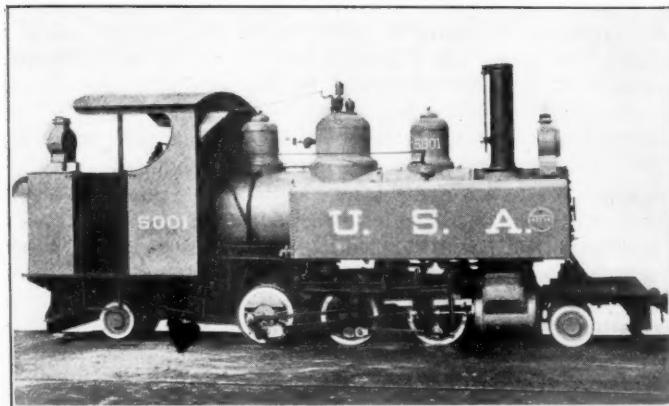
5. Confining use of hose to fire protection purposes. Care and maintenance according to detailed recommendations.

6. A clearing house for both new and old hose and authoritative records of all hose, couplings and threads used.

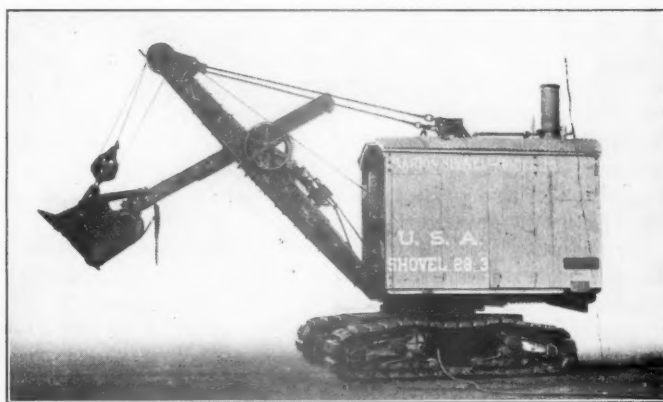
7. Adoption of the national standard, 2½-in. x 3 1/16-in., 7½ threads to the inch, as rapidly as practicable and provision of adapters where necessary.

EQUIPMENT FOR THE AMERICAN MILITARY RAILROAD

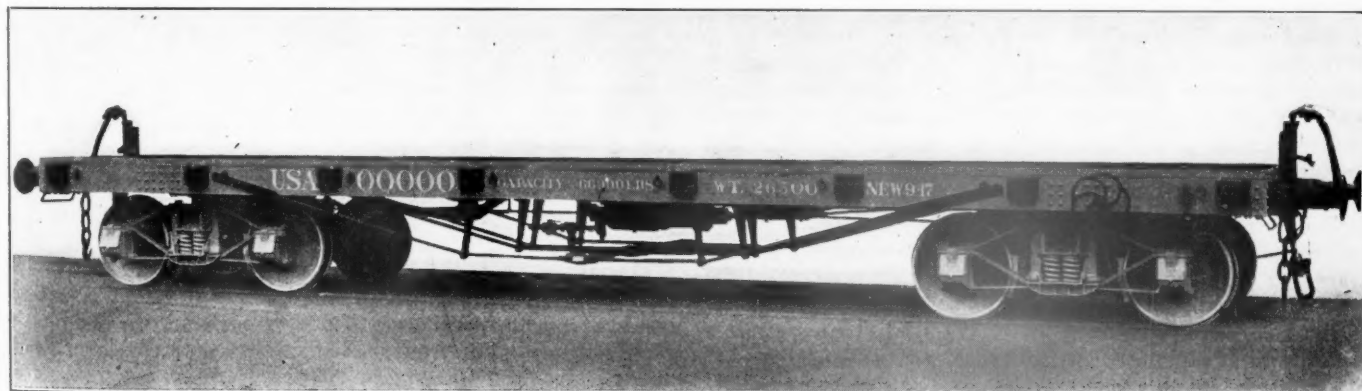
The illustrations show one of the narrow gage locomotives built by the Baldwin Locomotive Works for the United States government for service on the narrow gage lines running up to the trenches at the front; one of the standard gage flat cars built by the Haskell & Barker Car Company, and a crawling traction steam shovel also intended for military



Narrow-gage Locomotive for Light Railway Service in France; Built by Baldwin Locomotive Works



A Steam Shovel for the Railway Engineers; Built by the Marion Steam Shovel Co.



Standard-gage Flat Car of 33 Tons Capacity; Built for Service Overseas by the Haskell & Barker Car Company

Portable reels and standard hose houses for yards; substantial stationary reels in buildings.

2. Unlined linen hose where not exposed to dampness or mechanical injury, and not subject to test.

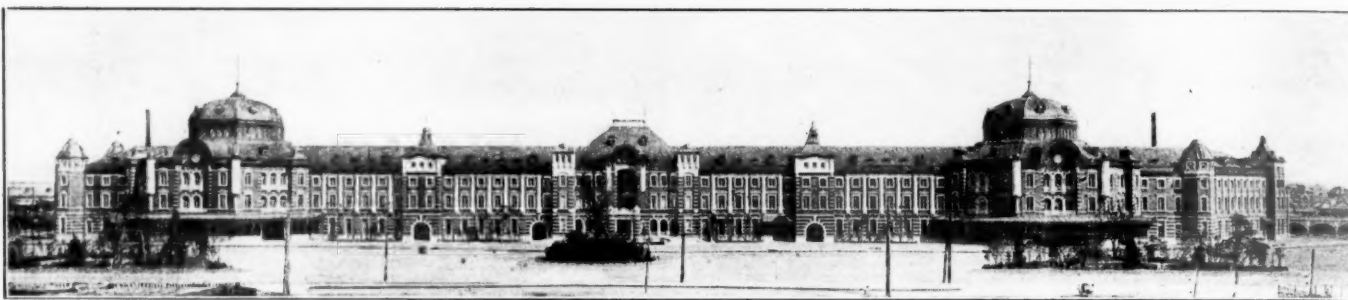
Use 1½-in. and 2-in. hose according to volume and pressure or size of injector pipes.

Use 2½-in. hose on engines equipped with independent pumps.

Metal racks and reels in buildings; metal rack in cab of switch engines.

railroad and construction work abroad. Under the regulations of the War Department and of the Committee on Public Information regarding the publication of military information, publication of the specifications of this equipment and of the number to be used is prohibited.

HOLLAND'S NEW RAILWAY GUIDE.—An Exchange telegram states that the Dutch Government recently published a new railway guide for the winter. Two-thirds of the express trains and many others have been eliminated.



New Central Station at Tokio

The Progress of the Japanese Railroads*

Part I.—Development of the System and an Account of the Present Organization, Traffic, Rates and Problems

By Sukehiko Goto

Civil Engineer for the Imperial Government Railways, Tokyo, Japan.

JAPAN began railway construction nearly half a century later than Europe and America, the first railway laid between Tokyo and Yokohama being opened in 1872. History records that a miniature engine was brought to Japan by Commodore Perry, in 1854, for presentation to the Shogun when his fleet made its first visit to Japan's shores. Some time later a railway concession between Tokyo and Yokohama was negotiated for American interests, but this project was frustrated by the downfall of the Tokugawa government.

Immediately after the restoration the new government laid down a program for a national system of railways, and after considerable delay funds were procured in England to the amount of one million sterling. This resulted in the construction of the 18-mile Tokio-Yokohama line, which was opened to traffic in 1872. Two years later the Kobe-Osaka section, a stretch of 20 miles, was completed and in 1877 it was extended to Kyoto. During the first decade of the railway construction program, work did not proceed as speedily as was at first intended, because of lack of funds, so that in 1882-3 only about 115 miles of line had been built, mainly centered about Tokyo, Osaka and Kyoto.

In 1881, after the government had concluded to encourage private enterprise, the Nippon Railway Company was organized to build a line between Tokyo and Aomori, the north-eastern extremity of the main island. Under the concession agreement the government undertook to construct part of the new road and assumed control over construction and finance, including rate-making. In return for a land grant and a guarantee of interest payment up to 8 per cent for 10 to 15 years, the company was obliged to finance 50 per cent of the work and to provide certain reduced cost service. The term of the concession was fixed at 99 years, with the privilege of government purchase after 50 years.

The success of this venture gave impetus to private undertakings, and until 1891 no less than 15 railway projects had been started in different parts of the empire and the lines had attained an aggregate length of 1,071 miles, although the government had later greatly restricted construction subsidies and interest guarantees. Railway ventures met with a check in the crisis of 1890, resulting from a crop failure, while the desire for State purchase came to be increasingly evident in that it became exceedingly difficult to operate certain lines with anything like a fair return upon the investment.

Early in 1891 a state purchase bill was placed before the Imperial Diet, but as a result of a compromise this was

withdrawn in favor of a railway construction act, which was passed the next year. This law authorized the government to float bonds for railway construction, and the purchase of private railways. On the other hand, some of the favorable routes were left open to private enterprise. This law served to encourage private building more than state construction and at the end of 1894 the government owned 580 miles of road, as compared with 1,305 miles in the hands of private interests, while ten years later the relative figures stood at 1,461 miles and 3,231 miles. Although the government was far from satisfied with this state of affairs, no concerted move for government ownership was made until after the war with Russia, when, in March, 1906, a bill for the state purchase of railways was introduced in the Diet, which was finally passed in a somewhat modified shape.

THE PURCHASE LAW

Under the provision of this law the government was authorized to take over 17 private lines at any time between 1906 and 1915 at a purchase price determined by the following formulæ:

1. Twenty times the amount obtained by multiplying the cost of construction at the date of purchase by the average rate of net profit on the cost of construction during the six semi-annual business terms of the company from the latter half of 1902 to the first half of 1905 inclusive.

2. A sum obtained by converting at the market price the actual cost of stores into the face value of public loan bonds, excepting purchases made with debentures.

By the term "net profit" in the first clause is meant the balance remaining after deducting from the earnings the operating expenses, bonuses, and the interest accruing from accounts other than the revenue account. The purchase price was to be paid in not less than five years after date of purchase in public loans at face value bearing interest at five per cent.

The purchase of the 17 railways was carried out within 18 months, ending in October, 1907, instead of 10 years. The mileage thus acquired was 2,827 miles and the purchase price, including numerous utilities of an allied character, was about \$240,000,000.

SYSTEM GROWS RAPIDLY

The period from the time of nationalization until 1914 was one of phenomenal expansion of traffic. The mileage increased from 4,444.8 miles to 5,472.7 miles, or 23.1 per cent, and at the same time the mileage of double or multiple tracks increased from 459.5 miles to 739.4 miles. The number of locomotives rose from 1,924 in 1908 to 2,500 in 1914, or 29.8 per cent; the number of passenger cars from 4,989 to 6,458, and of freight cars from 32,242 to 42,705. During the seven years the average weight of locomotives rose from 48.0 tons to 52.9 tons, and the average capacity of freight cars from 7.2 tons to 8.6 tons. The locomotive mileage also

*Part 2: An account of the roadway and equipment practice, construction standards, administration of employees, etc., will appear in a later issue.

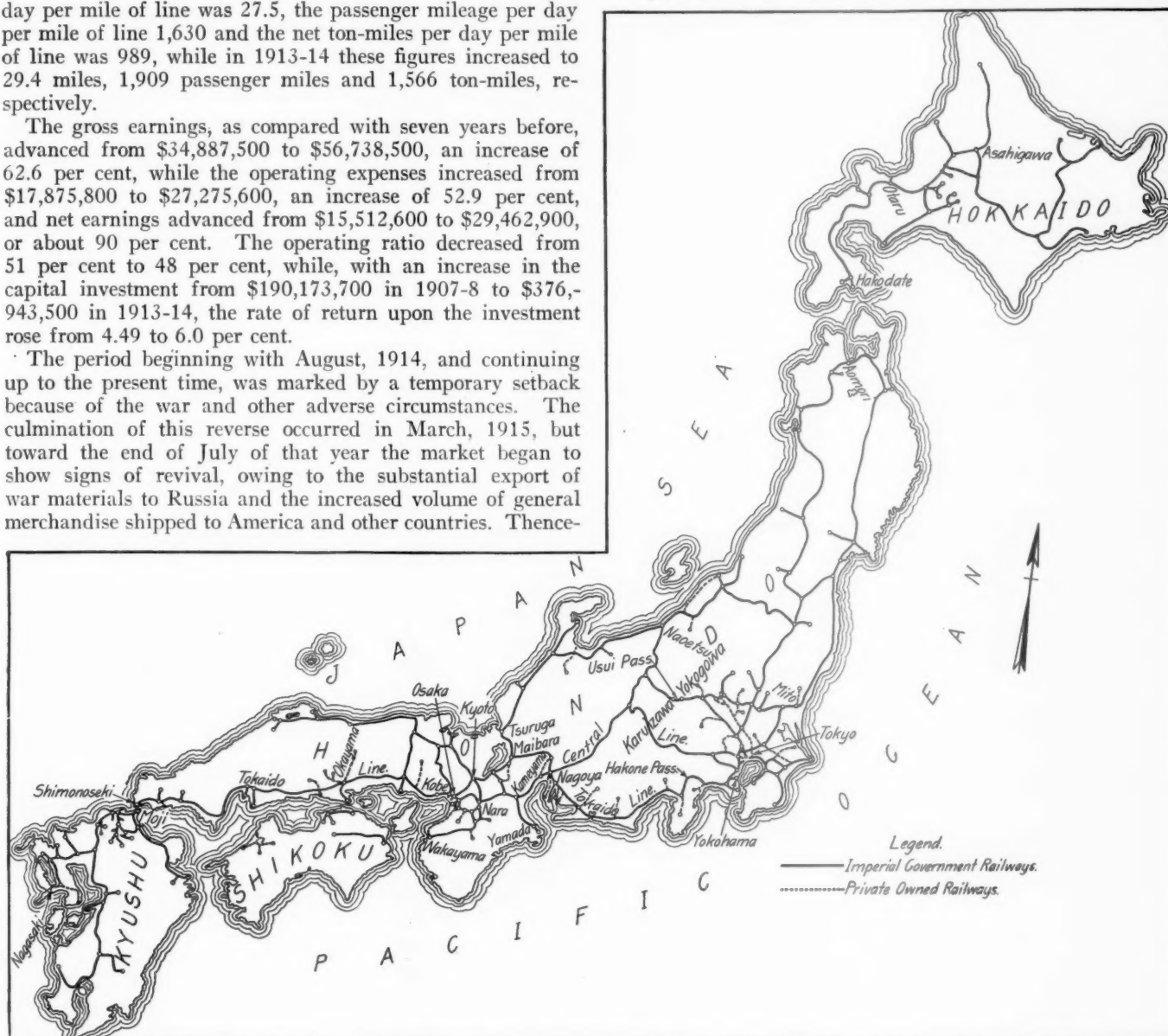
increased from 43,901,036 to 68,744,136 miles and the car mileage from 647,183,493 to 1,212,753,097 miles.

The passenger mileage increased from 2,353,270,765 to 3,690,964,619, a gain of 47.5 per cent, and the ton-mileage from 1,441,125,011 to 3,053,842,638, or more than double the figures of seven years previous. The density of traffic was also marked. In 1907-8 the number of train-miles per day per mile of line was 27.5, the passenger mileage per day per mile of line 1,630 and the net ton-miles per day per mile of line was 989, while in 1913-14 these figures increased to 29.4 miles, 1,909 passenger miles and 1,566 ton-miles, respectively.

The gross earnings, as compared with seven years before, advanced from \$34,887,500 to \$56,738,500, an increase of 62.6 per cent, while the operating expenses increased from \$17,875,800 to \$27,275,600, an increase of 52.9 per cent, and net earnings advanced from \$15,512,600 to \$29,462,900, or about 90 per cent. The operating ratio decreased from 51 per cent to 48 per cent, while, with an increase in the capital investment from \$190,173,700 in 1907-8 to \$376,943,500 in 1913-14, the rate of return upon the investment rose from 4.49 to 6.0 per cent.

The period beginning with August, 1914, and continuing up to the present time, was marked by a temporary setback because of the war and other adverse circumstances. The culmination of this reverse occurred in March, 1915, but toward the end of July of that year the market began to show signs of revival, owing to the substantial export of war materials to Russia and the increased volume of general merchandise shipped to America and other countries. Thence-

Through trains provided with dining and sleeping car service are regularly run on all the trunk lines, of which the daily train de luxe between Tokyo and Shimonoseki is most notable. This is scheduled to make connections with the Korea-Manchuria through train and the train on the Chinese Eastern railway to facilitate overland communications with Europe via Korea, Manchuria and Siberia. A train is also



Map of Japan

forward the monthly returns have marked a steady increase up to the present.

Traffic returns for the year ending March 31, 1916,

Item.	Year under review.	Increase against preceding year.
Passengers carried	165,780,993	5,384,681
Tons of freight hauled	323,896	38,787
Earnings from passenger traffic	\$30,117,000	\$2,676,000
Earnings from freight traffic	\$30,446,000	\$3,442,000
Total	\$60,563,000	\$6,118,000

While endeavoring to promote the growth of traffic and insure the profitable operation of the lines, the railway management has made material efforts to improve the passenger and other service in the direction of safety, speed and comfort. The speeds of passenger trains have been increased materially and the size and weight of the cars have been increased so that they are now practically of the same dimensions as those in use on English railways.

run on the line between Tokyo and Tsuruga, a port on the Japan sea, to effect a connection with Vladivostok and the trans-Siberian route.

Recent years have witnessed the electrification of a substantial mileage of urban and suburban lines. Electric trains are now run between Tokyo and Yokohama, an additional double track line having been built for that purpose. The Yamanote line, which connects Tokyo and Ueno station, north Metropolitan terminus, has also been electrified for the convenience of through passengers.

The ferry service between Japan proper and Korea, the main island and the islands of Shikoku and the Hokkaido is operated by the railways. Thirty-six steamers are in the service and about 2,000,000 passengers and 800,000 tons of freight are handled annually. Car ferry service was also inaugurated a few days ago as a connecting link between the main island and the island of Kvushu.

PASSENGER FARES

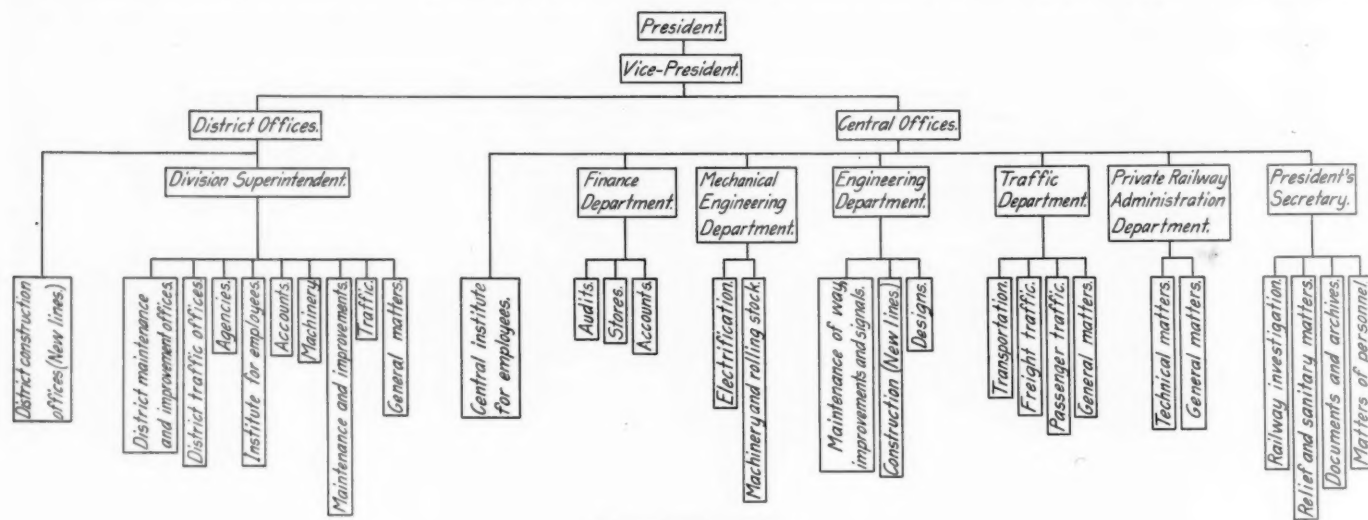
When the private railways were nationalized and brought under uniform control in 1907, the passenger fares on the purchased lines were fundamentally remodeled, a tapering system being adopted. This brought about a substantial reduction in all rates, particularly for long distance travel. The fare per mile for third-class was fixed at 0.87 cents for distances under 50 miles, 0.65 cents for distances between 50 and 100 miles, 0.5 cents between 100 to 200 miles, 0.4 cents between 200 to 300 miles, and 0.35 cents for distances above 300 miles. The rate for second-class was reduced from 175 per cent to 150 per cent of the third-class, and the first-class from 300 per cent to 250 per cent of the third. A transit tax imposed upon all tickets is collected by the railways and paid into the treasury. An extra charge is made for passage on limited trains. For suburban travel, commutation and season tickets are sold at reduced rates, an 80 per cent discount being accorded to school children. The limit of free baggage is fixed at about 40 lb. for the third-class, about 80 lb. for the second-class and about 133 lb. for first-class.

The effects of the reduction of fares, especially on long distance travel under the new tariff, are indicated in a comparison of the traffic revenue during the years 1907-08 to that of 1908-09. In 1907-08, when the new tariff was in operation for six months, the number of passengers per mile of

zone. The terminal charge, which was uniform under the old system, was differentiated according to distance, a substantial reduction being effected in the charge upon short haul traffic. At the same time the distinction between terminal and transportation charges was abolished in accounting the rates. The carload consignment was graded into three classes, different rates being adopted for the different classes in consideration of the relative ability of each class to bear the charge, while specially reduced rates were provided for the first-class goods, which comprise practically 90 per cent of the whole volume of the freight traffic.

The new classification distinguishes four grades: quick service, less-than-carload (kin [3.4 lb.] rates applicable), less-than-carload (ton rates applicable) and carload. The first is for quick service on freight trains and has the advantage of free cartage within the radius of four miles of the destination. The second is for shipments to which kin rates are applicable, the minimum rates being for 67 lb. The third applies to heavy goods measured in terms of tons, and the tariffs thereon are relatively cheap. The carload grade applies to freight of five tons and more received as one shipment.

The classification of goods consists of a first-class, including cereals, coal, cement, timber, stone, salt and manures; a second-class, including sugar, tea, cotton, young shoots and fruits; a third-class, containing pottery, porcelain, furniture,



Organization Chart

line was 25,790 more than in the preceding year, but the average earnings per passenger fell off by 2.6 cents and the average per passenger per mile by 0.01 cent.

FREIGHT RATES

The railroads provide a parcel service handled on passenger trains which corresponds to the express service in the United States, and provides for free delivery within specified limits. The existing rates were adopted in 1905. The minimum rates are fixed at 2.6 cents per pound, applicable uniformly to all distances within 700 miles and 3 cents above 700 miles, the rates being increased on a mileage tapering system with the increase in weight and distance. Double the ordinary rates are levied upon perishable and bulky commodities like paper work, lacquerware, glasses, hats and caps, light utensils and machines.

In October, 1912, a new freight tariff was put into force which was applicable uniformly to all the state lines in the Empire, with the exception of the San-yo line, where a special tariff was adopted in view of competition with the sea route. The Belgian tapering system, based on the zone system, was adopted for the new tariff, which was framed upon the basis of certain fixed rates with an increase for each additional

fabrics, liquor, cakes, etc., and the high-class, including silk, watches, clocks, raw fish, drugs, etc. There is also a special class, having six subdivisions—that including cattle and horses, petroleum and matches, vehicles, corpses, silver and gold currency, bank notes and gunpowder.

Owing to the favorable business conditions, as well as the stimulus accorded by the reduced tariffs, the aggregate freight earnings for 1912-13 showed an improvement of \$1,850,000, or 4.3 per cent, on the figures of the preceding year, though the average rates per ton fell off by 2 cents and the average per ton mile by 0.055 cents. An increase of 27 per cent in the average mileage of freight per ton was also realized, due partly to the growth of long distance traffic encouraged by the reduced rates and the consequent extension of markets.

INTERNATIONAL TRAFFIC ARRANGEMENTS

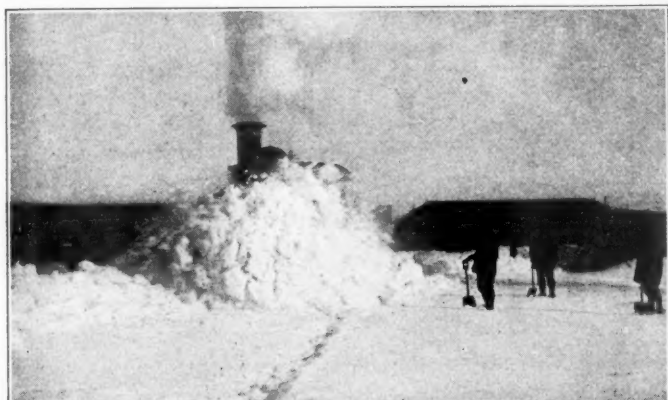
The government railways have entered into joint traffic conventions with a number of steamship lines touching at the islands. Immediately after the Russo-Japanese war negotiations were opened with Russia with a view to realizing the rail-and-water connection between Europe and Eastern Asia, and in consequence the following through passenger traffics have been put in force: (1) Manchurian-Japanese through traffic, between Japan and North Manchuria (Rus-

sian sphere of influence) and the Maritime Province; (2) Russo-Japanese through traffic, between Japan and Russia; (3) international through traffic between Japan and western Europe (now interrupted by the war).

The through freight service between Japan and Russia is but of recent inauguration, and as such its scope is limited as compared with the passenger traffic. At present two through freight services are in operation, viz., the Manchuria-Japanese through traffic between Japan and Manchuria and the Maritime Province and the through shipment of silk between Japan and European Russia. During 1914-15, 597,370 lb. of cotton yarns, 4,992,573 lb. of cotton tissue and 291,803 lb. of shirtings and knitted goods were carried under this traffic. The through transport of silk can be made in three weeks over the trans-Siberian route, as compared with 65 days spent on the Suez route. The Japan-China through traffic now provides only for the conveyance of passengers and their baggage, the freight traffic service being now under negotiation.

TRAFFIC STATISTICS

March, April and May are months of brisk tourist traffic because of spring pleasure trips, student excursions and religious pilgrimages. After an interval of about two months of stagnation during the rainy season, a general quickening



Fighting Snow

of business again takes place with the advent of the summer season. Another period of prosperous business occurs in October and early November, months of calm, fine weather when all railway lines are crowded from day to day by picknickers. Tourist traffic is regarded as one of the most important sources of revenue, as may be seen from the following table, showing the growth of party passenger traffic during the past five years:

	No. of Tickets Sold	No. of passengers carried one mile under discount party fares.	Earnings from sale of discount party passenger tickets.
1914-15	45,353	3,895,718	\$909,000
1913-14	49,230	3,878,857	1,103,000
1912-13	42,321	3,968,758	1,126,000
1911-12	35,349	2,745,193	839,000
1910-11	38,760	3,560,546	665,000

A comparative statement of traffic in some leading commodities in 1914-15 follow:

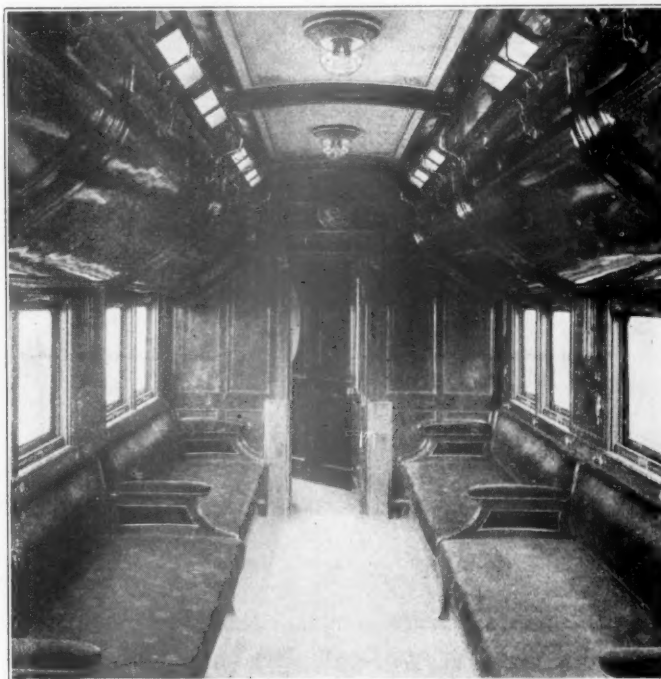
Description.	Tons.	Earnings.
Rice	1,392,785	\$1,232,000
Wheat	398,409	265,000
Salt	351,447	210,000
Iron and steel.....	240,130	227,000
Charcoal	572,516	554,000
Timber	2,468,718	2,043,000
Stone	490,945	266,000
Petroleum	309,266	399,000
Coal	14,453,384	6,118,000
Minerals	555,186	474,000
Fertilizers	436,508	330,000
Bean refuse	363,630	266,000
Raw fish	327,113	912,000
Salted and dried fish.....	262,039	465,000
Cocoons	122,492	288,000
Cotton cloth	191,456	411,000
Live stock	208,027	298,000

One of the peculiar features of Japanese railways down to recent years was that passenger revenue was greater than that from freight traffic. This disparity has, however, been steadily disappearing since the nationalization of the roads and freight earnings have exceeded those of passengers for the three years past, as follows:

	Passenger Earnings Per Cent.	Freight Earnings Per Cent.
1907-8	56	44
1908-9	54	46
1909-10	53	47
1910-11	53	47
1911-12	53	47
1912-13	49	51
1913-14	49	51
1914-15	49	51

ORGANIZATION

Prior to the railway nationalization, there were two government bureaus in charge of railway affairs, both under the jurisdiction of the department of communications. One had general supervision of both state and private railways and the other was responsible for the operation, maintenance



Interior of First Class Sleeping Car

and construction of state lines. The two departments were consolidated in 1908, and the Imperial Railway Board was created, the jurisdiction of the Imperial government railways being thereby transferred to the direct control of the Minister President of State.

Simultaneously, radical changes were effected in the internal organization of the Imperial government railways, which had so far been managed upon a departmental system. This system worked very well, so long as the operation of State lines was a comparatively small business, but with the sudden increase in mileage realized by the purchase of all trunk lines in the Empire, it was found decidedly inadequate. The centralization system was accordingly abandoned in favor of a divisional one. Under the new system the lines were divided into five different divisions (three for the main island and one each for the islands of Kyushu and Hokkaido). The chart shows the existing organization of the Imperial Government Railways.

RAILWAY PROBLEMS

The railway accounts law provides that the Imperial Government Railways must finance new extensions and improvements from earnings. The annual surplus set apart for this

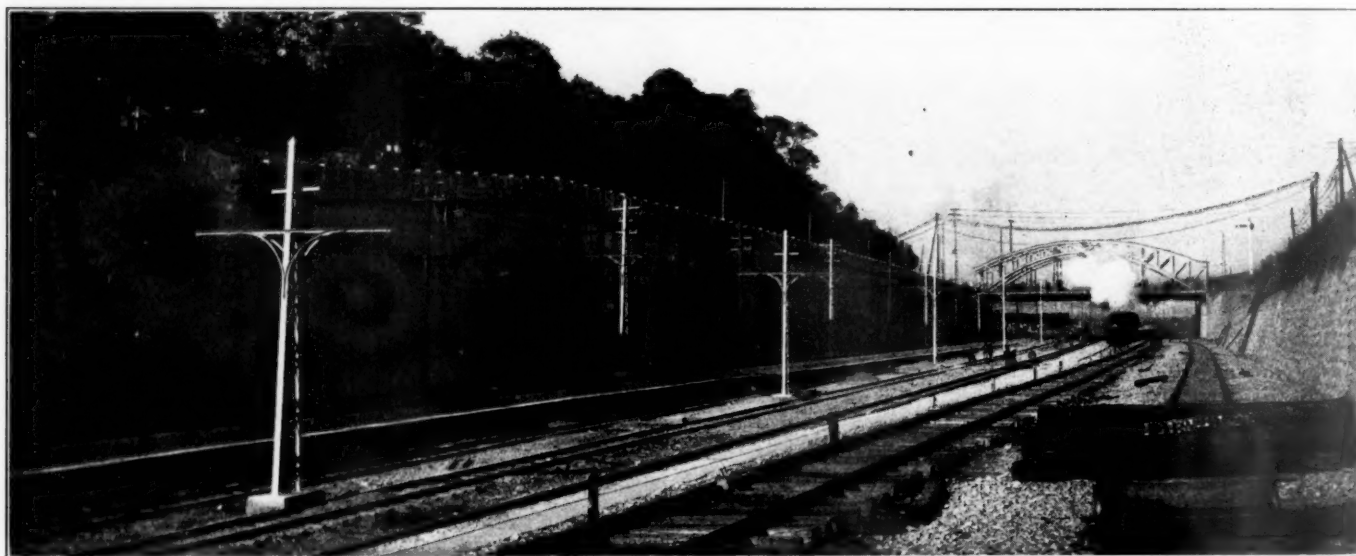
purpose during the last six years averages a little more than \$8,000,000, while between \$15,000,000 and \$30,000,000 has been expended annually upon construction and improvement work. The result is a deficit of from 10 or 15 million dollars in the capital account. So far, the balance in the capital outlay has been met with temporary appropriations from the postal savings deposits, the accounts being subsequently cleared by the issuance of short term treasury bills and the flotation of foreign loans. The present cabinet has adopted a new policy whereby the annual sinking fund installment has been curtailed from \$25,000,000 to \$15,000,000, the balance of \$10,000,000 being allocated to railway purposes. This departure from the basic principle of the railway independence has elicited serious opposition in the legislature, but it seems to be recognized on all sides that the continuation of the work specified in the government program would otherwise be impossible under the circumstances, unless a radical change should be effected in the general policy of railway nationalization.

According to official estimates for the continuing expenditure, as passed in the recent session of the Diet, until 1927, the government railways will have expended upon construc-

of locomotives of heavy types and greater speed, very little effort has been made, owing to lack of funds, to improve the tracks, the greater part of which are still laid with 60-lb. rail, only 10 per cent of the total mileage having been replaced by 75-lb. rail. The bridges, too, especially those on the lines which were built prior to 1907, suffer much from overstress. Under the circumstances it is found impossible to insure the safety of train service without limiting the operation of heavy engines to certain lines or issuing slow orders. The tunnels, too, are in bad shape and many of them are in urgent need of reconstruction.

The double-tracking of the existing lines is now being prosecuted energetically on certain sections with a view to accommodating a train movement commensurate with the present and prospective requirements of the growing traffic. The elimination of curves and gradients also claims immediate attention, and a number of reconstruction projects are now under way.

Three-quarters of a million dollars will be required to complete the remaining portion of the metropolitan improvements, which consist in building overhead urban lines and connecting the two leading stations in Tokyo. In view of



Electrified Line Under Construction Between Tokio and Yokohama

tion and improvement work a sum of \$408,700,000. Practically three-fourths of the annual installments of the expenditure will be devoted to the betterment of the existing tracks and structures, only one-fourth being expended for new extensions. The reasons for apportioning the expenditure in this ratio may be said to be quite sound, as the growth of traffic points to the pressing need for bringing the lines to a higher standard of efficiency.

The improvement expenditure to be disbursed down to 1927 is made up as follows:

Tracks and structures	\$112,085,000
Electricity	7,529,000
Rolling stock	24,000,000
Shops	4,200,000
Floating equipment	950,000
Total	\$148,764,000

"Tracks and Structures" implies the adding of second or multiple tracks to the existing lines, the building of branch lines and connections, the re-location of parts of the lines, grade separation, terminal improvements, the betterment of tracks and the strengthening of bridges and culverts.

One of the striking features of the railways is the inadequate condition of the tracks in contrast with the high efficiency of motive power. This is chiefly due to the fact that, while the continual growth of train loads and the consequent demand for greater tractive power have led to the adoption

the increase in the train length and in the frequency of train service, the enlargement of station accommodations has become a matter of urgent necessity at several business centers in the empire. Work is now in progress on the rearrangement and extension of platforms, and of passing and yard tracks, and the enlargement of office buildings and other structures.

The railways require new equipment to the extent of 90 locomotives, 80 passenger cars and 1,500 freight cars each year. Complaints are current yearly because of the congestion of traffic due to the car shortage, especially at the time of the brisk movement of traffic in rice produce and fertilizers, as well as during the year-end season. Two-thirds of the passenger cars are of the small four-wheel type, which the authorities are desirous of superseding with six-wheel cars as soon as money is procured and a plan is devised to dispose of the old equipment taken out of service.

Referring next to the new extensions which represent the construction of 1,200 miles of railway and light railway lines, it is the hope of the railway authorities that the existing policy of starting many different lines at the same time under the pressure of local demands will be abandoned. Under this policy, the funds to be allotted for each line are necessarily scanty, and accordingly the construction work can be but slow, and obviously involves a serious waste. Here-

after it is proposed to pursue a policy of concentration whereby only a few lines will be taken up for construction at a time, and not until they are finished will work on others be started.

STANDARDIZATION OF GAGE

The improvement plans under consideration raise the question of gage which has long been a standing problem. The present narrow gage of 3 ft. 8 in. was adopted during the infancy of Japanese railways when the conditions of the country hardly warranted the building of heavier lines. With the industrial growth of the country the narrow gage was found inadequate and the question of gage conversion appeared in the Diet in as early as 1896. In 1905 the government was approached by E. H. Harriman with the proposal of financing the gage-widening work, but the offer was not entertained on account of the unsatisfactory conditions of the proposed loan, and the scheme remained in abeyance for several years.

In November, 1910, the government appointed the Broad Gage Investigation Commission, which, after several months of thorough and exhaustive study, submitted a report, recommending the completion of the work in the course of 12 years. In August of the same year a ministerial change took place; the next cabinet was against the scheme, and with the dissolution of the committee in December, 1911, the scheme was shelved indefinitely on the ground that there were no resources to finance the undertaking.

On the inauguration of the present government in 1914 the Railway Board was ordered to resume investigations, the results of which were laid before the cabinet in December, 1915. This scheme proposed that the reconstruction of the Tokyo-Shimonoseki line be completed in the course of 12 years with the cost of \$150,000,000, and the other trunk lines in the main island (except the Sobu line) in 25 years with an expenditure of \$299,000,000.

In April, 1916, another gage committee was organized with Count Okuma as chairman, who is quoted as follows:

"There is no longer any doubt as to the necessity of gage-widening work, though the commencement of the undertaking had long been delayed for financial reasons." A suggestion has been made that a portion of the government railways should be transferred to private ownership mainly for financial reasons, the government devoting itself to the improvement of the lines under its control, while the extension of the railways should be left to private enterprises. Under such an arrangement, if adopted, it would probably be found necessary for the government to give some assistance in the construction of new lines."

The deliberations are now in progress and it is expected that the committee will be able to arrive at a decision before long.

INDIAN RAILWAY DEVELOPMENT.—The Railway Board of India has sanctioned a survey by the Eastern Bengal Railway for a 5 ft. 6 in. gage line from Birngar on the Lalgola branch of the railway to Krishnagar via Santipur with an extension to the Bhagirathi River opposite Nabadwip.

RAILROAD CONSTRUCTION IN DONETS BASIN.—A council of mine owners in Donets Basin of Southern Russia has prepared a list of 28 lines, the construction of which is regarded as necessary for the development of the mining industry. Among the most extensive of the proposed roads are the following: Connecting Tschervovka with Matvejef-Kurgan (50 miles); from the station Tasinovataza to the station Nikitovka (20 miles); Nasvetevitch to Tama (20 miles); connecting the station Gratchi with the station Ekaterinskaya (14 miles); connecting Grishino with Krematorsky (10 miles). A number of companies in the Donets Basin have completed grading new roadbeds, but can not complete construction work because no rails are obtainable.

RAILWAY MEN OUT TO BEAT THEIR LIBERTY LOAN RECORD

The railways, under the direction of the Liberty Loan Committee on Railroads headed by President Smith of the New York Central, have started a new nation-wide campaign to enlist subscribers for the Second Liberty Loan. With the assistance of a vast series of local organizations of officers and employees, the committee hopes to double the subscriptions made by railway men in the First Liberty Loan, when 241,280 employees subscribed for \$20,027,966 in bonds. This amount was in addition to approximately \$50,000,000 in bonds taken in large blocks by the railroad companies, and wide scattering of the securities to employees was made possible through the arrangements made for payments in installments from the weekly or monthly pay rolls.

The committee has sent telegrams to over 500 railroad presidents throughout the United States urging special organized effort for the sale of the Liberty Bonds. The telegrams said:

"The Liberty Loan Committee, under direction of the Secretary of the Treasury, again requests the undersigned to ask your support in selling Liberty Loan Bonds to railway officers and employees of every grade. It is deemed desirable to make a concerted effort by all roads in the country to put the opportunity equally before all, along the general lines adopted with respect to the First Liberty Loan, offered last spring. Your Committee's experience emphasizes the importance of prompt and thorough *special organizations* in order to obtain effective results. Please wire if you will co-operate."

The telegrams were signed by the members of the committee as follows: A. H. Smith, president of the New York Central, chairman; F. D. Underwood, president of the Erie; W. H. Truesdale, president of the Delaware, Lackawanna & Western; Henry Walters, chairman of the board of the Atlantic Coast Line; Walker D. Hines, acting chairman of the executive committee and general counsel of the Santa Fe; L. F. Loree, president of the Delaware & Hudson; John D. Dennis of the New York banking firm of Blair & Co. and H. W. Burnham of the New York Central, who is secretary of the committee.

Responses from railroad executives pledging hearty co-operation and the formation of special organizations for the bond selling have come in sufficient volume to indicate a practically unanimous effort, and one that with the advantage of previous experience, promises to surpass former results. The Committee on Railroads has set October 27 as the final date on which subscriptions may be received.

The energies of all the vast executive organizations of the American Railroads, numbering nearly 1,000 separate companies, large and small, will be impressed in to the bond selling campaign throughout the next three weeks. Circulars, subscription blanks and advertising matter will be distributed to every individual railroad employee. Under the plan for special organizations, this will be followed up by personal work in charge of local committees of both officers and employees. Employing officers in all of the various departments of transportation service, in the field as well as in offices, will be instructed to bring the matter of contributing to the nation's war sinews to the personal attention of every man and woman who is able to make a subscription.

The campaign will be conducted from the offices of President Smith at the Grand Central Terminal, New York, where constant reports will be received on the progress of the work.

HOW VARIOUS RANKS SUBSCRIBED TO THE FIRST LOAN

Detailed reports from 67 of the leading railroad companies give the percentage of the total number of employees in

various departments of transportation service who subscribed to the first Liberty Loan as follows:

General officers, executives, 33.4 per cent; legal department, 45 per cent; traffic department, 41.7 per cent; accounting department, 29 per cent; transportation department (a) enginemen, 17.7 per cent, (b) firemen, 12 per cent, (c) conductors, 18 per cent, (d) agents, operators and station forces, 12.6 per cent, others, 16.5 per cent; locomotive department, 13.8 per cent; car department, 12.8 per cent; maintenance of way department, 1 per cent; all other employees, 16.7 per cent. Average percentage of all employees subscribing, 12.4 per cent.

PENNSYLVANIA SYSTEM WANTS 100,000 SUBSCRIBERS

The second Liberty Loan campaign among the employees of the Pennsylvania Railroad was inaugurated Tuesday morning with an address by President Samuel Rea, delivered at a meeting of about 200 officers of the company, held in the Y. M. C. A. building, Philadelphia.

Mr. Rea pledged the support of the management to aid the government in making the loan a success, and urged full co-operation on the part of all employees.

Other addresses were made by Vice-Presidents Henry Tatnall, W. H. Myers, and A. J. County; by Captain John P. Green, retired vice-president, James F. Fahnestock, treasurer, and R. L. O'Donnel, assistant general manager. J. C. Johnson, superintendent of telegraph, presided.

Mr. Fahnestock referred to the fact that 53,160 employees of the Pennsylvania Railroad subscribed to a total of \$3,440,600 of the bonds of the First Liberty Loan. He urged that every effort should be made to double this record with the Second Loan, and to obtain not less than 100,000 subscriptions for at least \$7,000,000 worth of the new bonds.

B. C. Henion, assistant auditor of disbursements, and chairman of the special Liberty Loan committee of the company, explained in detail the plans for conducting the campaign.

Those in attendance at the meeting were the officers of the company who have been designated to take active charge of the field work of the campaign, on all parts of the Pennsylvania Railroad Lines East of Pittsburgh and Erie. Each division, shop and department was represented, and general instructions were issued for all.

Approximately 65 committees will be organized to cover all portions of the railroad, and, altogether, upward of 1,000 men will be enlisted in the work of personal solicitation. It is part of the plan to make a personal and individual appeal, within a week at the latest, to each of the 160,000 employees on the Lines East, urging every one to become the purchaser of at least one bond of the Second Liberty Loan.

ADVERTISING THE LIBERTY LOAN

Roads the country over are bringing the advantages of subscribing to the Liberty Loan to their patrons at every occasion. They have put placards in their cars, put up posters and enormous banners in their stations; the Pennsylvania has even hung large signs on its ferry boats in New York harbor. In many stations booths have been erected for the use of the bond salesman. In the Grand Central Terminal in New York part of the big information counter in the center of the concourse has been turned over for that purpose. In the North and South stations in Boston, little Liberty Loan cottages have been built where the hurrying commuter may stop and arrange with the representatives of one of the banks for a subscription on the installment plan.

The Railroads' War Board has addressed a bulletin to the railroads stating that the director of publicity of the Treasury Department has requested the co-operation of the railroads operating dining cars to the extent that they have printed on the top of every menu card up to October 27, the date

on which the second Liberty Loan closes, the following: "Help your government win the war. Buy Liberty Bonds now." The War Board suggests this co-operation by the railroads.

COMPANY SUBSCRIPTIONS

A number of roads have already announced subscriptions to the Second Issue of the Liberty Loan on their own account. Among these roads are the following:

Atchison, Topeka & Santa Fe.....	\$5,000,000
Chesapeake & Ohio.....	500,000
Chicago, Burlington & Quincy.....	5,000,000
Delaware, Lackawanna & Western.....	4,000,000
Lehigh Valley.....	1,500,000
Missouri Pacific.....	1,000,000
Nashville, Chattanooga & St. Louis.....	250,000
Norfolk & Western.....	5,000,000
Northern Pacific.....	5,000,000
Southern Pacific.....	5,000,000
Union Pacific.....	5,000,000

KANSAS CITY SOUTHERN OPERATING PERFORMANCE

The Kansas City Southern has been making an excellent record from an operating standpoint during the past few months, showing large increases in gross and net train load in the prevailing direction of movement and an important increase in the average miles made per car per day. It will be noted from the table that the gross train load in the direction of prevailing movement has been increased from 1,277 tons for the fiscal year ending June 30, 1913, to 1,531 tons in the year June 30, 1917. In August, 1917, this figure rose to 1,632 tons. However, the greatest improvement has been in the net train load in the direction of prevailing movement. In 1912-1913 this figure was 654 tons, in 1916-1917 it had been increased to 828 tons, while in August, 1917, it was 915 tons or 40 per cent more than in 1912-1913 and 10 per cent more than the average for 1916-1917.

	Average Tons Per Car of Revenue Freight	Gross Train Load	Net Train Load	Avg. Train Load In Prevailing Direction	Avg. Miles Per Car Per Day
1912-1913.....	24.9	1,200	568	Gross 1,277 Net 654	27.1
1915-1916.....	25.8	1,379	628	1,474 689	36.4
1916-1917.....	26.3	1,373	650	1,531 828	40.8
1917					
January.....	27.6	1,403	699	1,470 794	40.1
February.....	27.1	1,370	660	1,559 855	41.5
March.....	26.8	1,388	663	1,603 874	43.7
April.....	25.8	1,412	669	1,578 874	45.0
May.....	27.0	1,378	639	1,576 863	45.3
June.....	26.7	1,330	623	1,574 867	47.1
July.....		1,383	635	1,579 885	46.8
August.....		1,386	638	1,632 915	45.5

This increase in the net train load has been made possible largely as a result of the better loading of cars. The average number of tons of revenue freight per car in 1912-1913 was 24.9; in 1916-1917 this had been increased to 26.3 while in January, 1917, it had risen to 27.6. In this connection it is interesting to note that although there was an increase of 1,006,312 lb. of merchandise freight handled in August, 1917, over that of the same month of the previous year, this was handled in 141 less cars. The average loading of merchandise per car in August, 1917, was 13,020 lb., an increase of 1,341 lb. over that of the previous year. This comparison shows an increase of 3.6 per cent in the tonnage handled with an average increase in the loading per car of 10.3 per cent and a decrease of 7.1 per cent in the number of cars required.

Another highly satisfactory performance is shown by the average miles made per car per day. In 1912-1913 this was 27.1. In 1915-1916 it had been increased to 36.4 and the following year to 40.8. This increase has been continued through the present calendar year, the maximum movement of 47.1 miles being made in June, 1917.

NO FARE INCREASE IN IRELAND.—The increase of 50 per cent in English railway fares put into force on January 1st last is not in operation in Ireland.



View of one section of the work.

Dragline Used Successfully in Track Depression

New York, Chicago & St. Louis Is Departing From Usual Methods In Lowering Its Line in Cleveland

THE New York, Chicago & St. Louis is now engaged in the separation of grades with the streets on a section of its line in Cleveland, Ohio, which involves the elimination of 24 street crossings at grade with the tracks and the construction of a four-track roadbed below the level of the streets for a distance of $2\frac{1}{2}$ miles in a cut having a maximum depth of 25 ft. The work is located entirely within the city. Thirteen of the 24 crossings will be carried over the tracks on bridges provided at every second street and marginal roads will be provided for the diversion of the traffic of the alternate streets which will be cut off at the right of way line. Two of the bridges will carry street car tracks. Foot bridges will also be provided at other points designated by the city authorities.

A total of 751,000 cu. yd. of material will be excavated for the track depression in addition to about 61,000 cu. yd. for retaining walls and bridge abutments. The project will also require 74,000 cu. yd. of grading for industrial tracks and 25,000 cu. yd. for street embankments. Over 42,250 cu. yd. of concrete will be placed in bridge abutments and retaining walls, requiring the use of 1,802,690 lb. of reinforcing steel. A total of 38,664 ft. of trackage will be provided and 266,330 sq. ft. of brick paving and 16,342 lineal ft. of curbing will be laid in the streets and marginal roads. The temporary bridges necessary for the carrying on of the work involve an expenditure of more than \$95,000 and the expenditures for the moving of water mains, sewers and drains will total more than \$170,000. It is estimated that the cost of the entire project will exceed \$5,000,000. In addition to its magnitude, the work is of particular interest because of the successful use of a dragline excavator under conditions complicated by street crossings, street car tracks, sewers and overhead cable and wire crossings. In spite of such conditions, the excavator has moved an average of 96,000 cu. yd. of material each month, or about 3,200 cu. yd. each day.

The district affected by the improvement extends $2\frac{1}{2}$ miles from Walworth Run on the east to West Ninety-sixth street and Detroit avenue on the west. It is located in the south-

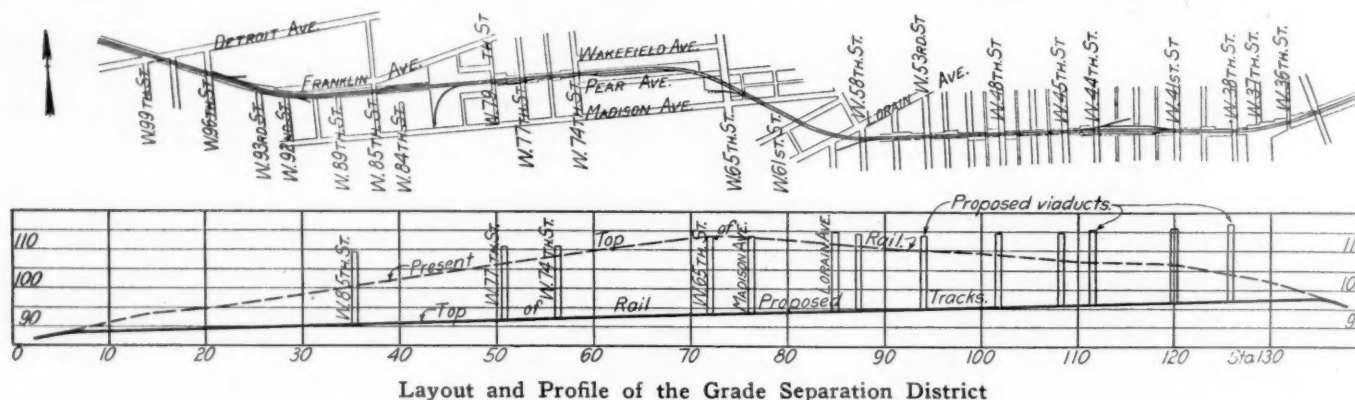
western section of the city in a district already built up solidly with residences, business places and industrial plants so that any plan for improvement presented many difficulties. Because of a summit in the old double-track line located near the center of the work at West Sixty-fifth street, it was impractical to elevate the tracks. It was, therefore, decided to depress them for the entire distance. This decision created the problem of the disposal of the 751,000 cu. yd. of excavated material. It was at first planned to waste the material along the line of the Big Four in a valley called Walworth Run through which the city has built a large sewer, the valley being unoccupied and in an unsightly condition. The first studies which were made for the disposal of the material in this locality were with a view of moving the earth by steam shovels and trains, but as it was found to be impossible to handle the material over the Big Four tracks without serious interference with the regular traffic and as the alinement of the track to the waste bank would have been so irregular as to make it impractical to reach sufficient ground for the disposal of all of the material, this plan was abandoned and it was decided to make the excavation by hydraulic means, utilizing 11,000 ft. of pipe line and pumps designed to discharge 4,000 gal. a minute under a head of 125 ft., as described in the *Railway Age Gazette* of June 16, 1916, page 1335. The equipment for carrying on the work in this manner was secured, but before operations were begun it became desirable to utilize the material from the cut in the double tracking of the Nickel Plate line east of Broadway yard. The decision to utilize excavation in this way made it necessary to load the material on cars. In studying the problem of removing the material and disposing of it all east of the work, it was apparent that if steam shovels were used of sufficient size to load from the bottom of the cut into cars at the elevation of the existing tracks, it would be necessary to dismantle the shovels when passing streets carrying street car tracks. As this situation could be avoided by the use of the dragline and at the same time secure the advantage of utilizing the existing tracks at the old level for the dump cars, thus mak-

ing it possible to handle long trains, such a machine was chosen for the work.

This change in the plans for the disposal of the excavated material after the purchase of the hydraulic equipment left the railroad with a large construction outfit on hand. It is of interest to note that, by taking advantage of the unusual high prices, the railroad has already disposed of the greater part of this equipment for a sum sufficient to nearly cover the investment. With all the material disposed of it is thought

depressed roadbed is being made in two cuts. By shifting the old main tracks to the south where necessary and taking advantage of the additional right-of-way on the north, it was possible to make the first cut while maintaining double track operation for the entire distance east of West Seventy-ninth street, except for a short stretch west of Lorain avenue, where it was necessary to resort to single track because of the diversion of the street car tracks.

The work was begun at the east end with the machine



Layout and Profile of the Grade Separation District

that the change in plans will not result in any appreciable loss from this account.

In making the preliminary studies for the improvement, both two-track and four-track layouts were considered and as the estimates showed a very little difference in the cost of the two schemes and as the cost of changing to a four-track layout after once completing a two-track scheme would have been prohibitive, it was decided to construct four tracks at once. In the plans adopted, the bridges are all to be constructed for eight tracks. The four-track prism is being excavated with $1\frac{1}{2}$ to 1 slopes. By installing retaining walls on the right-of-way line and taking out these slopes, the four-

working directly on the surface of the ground as a result of which it experienced no delays in moving over street intersections. The first cut was made on the north and as the work progressed new double tracks were laid behind the dragline and ballasted. Before making the second cut, the traffic will be diverted to this new line.

In addition to the dragline, the equipment consists of three trains of 20 cars each and five locomotives. The cars have a capacity of from 10 to 15 cu. yd. according to the nature of the excavation. The dragline is equipped with a 5-yd. bucket and loads a car in less than three minutes or a train of 20 cars in less than an hour. The dragline averages two and one



One of the Temporary Bridges Built to Carry Street Traffic Across the Cut

track layout may, if necessary at some future time, be expanded to eight tracks.

PLAN OF THE WORK

Before acquiring the additional right-of-way for the project, schemes were considered for the carrying on of the work with as little interference to traffic as possible and with this in view the additional land was acquired on the north of the tracks where practical. East of Sixty-fifth street all the land acquired was so located. The excavation for the

half 50-ft. moves a day and between moves it maintains an average of a bucket load delivered to the cars about every 50 seconds.

The material is loaded into cars standing on a temporary track adjacent to the old main line and, with the exception of 150,000 cu. yd. delivered to the city over the Big Four tracks to make a fill at Walworth avenue, the entire 751,000 cu. yd. is being moved with a maximum haul of three miles east through the Broadway yards and utilized as filling material for double track work. Owing to the plan for providing

space for a temporary loading track, little time has been lost through delays in getting the empty cars to the machine. The efficiency of the operation is best shown in the monthly average of 96,000 cu. yd. of material moved.

As the machine moved through the cut each street crossing is closed as the machine reaches it. Temporary timber bridges have been installed over the first cut at the streets where permanent structures are not to be located. On the return trip, or second cut of the machine, the permanent bridges will be installed at the alternate crossings, which were not provided with temporary bridges after the first passage of the dragline.

In making the first cut, trouble was encountered at West Forty-fifth street where a high-tension transmission line



The Drag Line at Work

crosses over the tracks. The wires at this point would not clear the boom of the machine and, as it was estimated that it would cost \$10,000 to move the line, a short section of the excavation was left in place and was later removed by the company forces with a locomotive crane. At West Fifty-eighth street a temporary bridge was installed with the intention of diverting the street car traffic from Lorain avenue over this bridge so that the excavation through Lorain avenue could be made. Through delay in the delivery of the material it was not possible to make this shift in time and a section containing 12,000 cu. yd. of material was left unexcavated at this point. Later when the shift was made the material was removed by a steam shovel. At West Sixty-fifth street the work was complicated by street car tracks and water mains and at this point the machine moved over the street, leaving the material to be taken out later by a clamshell working from the lower level.

West of West Eightieth street the right-of-way narrows to 66 ft. and when the first cut was completed to this point the dragline was moved to the west end of the work and the north cut was completed with the machine working east. When the dragline arrives at Eightieth street on the return trip it will be moved over and excavate the south cut from that point east. Steam shovels will complete the south cut west of West Eightieth street and will also make the approach grade at the west end of the work.

At nearly all of the intersecting streets water pipes and sewers were encountered. At West Sixty-fifth street a 36-in. low service and a 24-in. high service water line were encountered necessitating carrying the pipes on a trestle. Through the delay of the city in reconstructing the West Fifty-fifth street trunk sewer, which is of brick and 4 ft. by 5 ft. in size, and which will intercept all the sanitary sewers between West Eighty-fifth and West Forty-second streets, considerable trouble was experienced from water and sewage collecting in the open cut. The contractor overcame the trouble at the start by installing pumps behind the machine as he went along. As the work progressed enough pumps

were not available to control the water and the sewage rose above the level of the new grade, interfering with the track laying. To remedy this condition the railroad brought in locomotive cranes and opened drainage ditches at the foot of the slope. In the re-construction of this sewer, which is 45 ft. below the grade of the main track, a start was made by tunneling but the heading south of the track was placed too close to the excavation and as the cut for the track depression reached this point the sewer blew out into it causing a cave-in and making it necessary to drive piling to support the old main line tracks. The sewer work is now being carried on in an open cut.

With the excavation completed a comprehensive scheme for drainage is contemplated. The city will build an intercepting sewer through the length of the cut between the two inside tracks or in the center of the work. While the grade of the cut is all down in a westerly direction, drainage will be effected by a catch basin located at every second street with lateral sewers connecting with the main sewer in the center of the cut. This drainage will be effected by placing the side drains three feet below the surface at streets not provided with catch basins and carrying the drainage each way from such streets with an average drop of about 8 in. to the catch basins.

With the exception of a small amount of concrete which has been placed in the wing walls of a few of the bridges, no masonry work has been started except in the retaining walls for the protection of various industrial plants. This part of



Some Typical Excavation Conditions

the work was described in the *Railway Age Gazette* of June 16, 1916, page 1335.

In designing the bridges a standard plan was followed in all cases where it was physically possible and nine of the 13 structures are to be similar with only minor variations to conform with the differences in the angle of the crossing, curvature of the tracks, etc. The design provides for flat slab spans of I-beams and concrete construction supported on two gravity abutments and three reinforced concrete piers. At square crossings with tangent tracks the clear span between supports is 27 ft., with the tracks spaced at 13 ft. centers, this allows of a 7-ft. clearance from the center of the tracks to the masonry. At skew crossings and when curved tracks are crossed the distance between supports is increased to maintain the standard clearance. Space is provided in the deck for a 34-ft. clear roadway and two sidewalks 10 ft. 11 in. in width. The floor is designed for a uniform load of 100 lb. per sq.

ft. and two 24-ton trucks in any position on the roadway.

The project is being carried on under the general direction of E. E. Hart, chief engineer of the Nickel Plate. W. J. Bergen, first assistant to the chief engineer, is in direct charge of the work and A. C. Harvey, field engineer, is in charge of the field operations. The dragline excavation and the operation of the dirt trains is being handled for the railroad by the Walsh Construction Company of Davenport, Ia.

REPORT ON NORTH BRANFORD COLLISION

The Public Utilities Commission of Connecticut has issued the report of its engineer, John F. Trumbull, on the butting collision of passenger cars on the Shore Line Electric Railway at North Branford, August 13, in which 19 persons were killed and 35 injured. This collision was reported in the *Railway Age Gazette*, August 15, page 299. The west-bound car had run a short distance past a meeting point because the conductor was asleep and the motorman was in a state of mental abstraction. The report says that motorman Negus, according to his own voluntary statement, was in a "dazed" or drowsy condition and oblivious to his surroundings and his duties.

A short distance after passing through a side track (where he should have waited to meet the other car) without realizing the fact, he brought his car nearly to a stop, and took on a passenger; and yet neither the motorman nor conductor could recall this incident when giving their testimony. Negus was suddenly restored to animation when he saw the opposing car, coming at 45 miles an hour, and he applied his air brake; but he does not know how he escaped being caught in the wreck. Passengers testify that he ran half the length of the car and jumped off at the center vestibule. The conductor had intentionally gone to sleep, first fixing himself in a comfortable position on a longitudinal seat.

For seven days prior to the collision both the conductor and the motorman had worked long hours, and irregularly. On Sunday, the day before the collision, Negus worked from 7:00 a. m. to 11:10 a. m. and from 3:10 p. m. to 1:40 a. m. the next morning, and in addition was on a car, deadheading, one more hour, or 15 hrs. 40 min. altogether. This combination of day work and night work had been common. There is evidence that Negus did not spend his rest periods in actual rest. The automatic cut-off, the "dead man's handle," designed to stop a car if a motorman should fall asleep, had been tied down so as to be inoperative. Negus said that his arm frequently became tired, holding down the controller handle. On this same trip he had overrun a meeting point at Madison and was called to his senses by the conductor giving him a bell signal. It was then that he tied down the controller. The inspector thinks perhaps he was not so much "dazed" as he was concerned with some personal problem or worry. The conductor, who should have been warned by this mistake at Madison, seems to have let it pass without much thought. He claims to have been subject to dizzy spells, but the testimony of the passengers discredits this claim.

The inspector puts the primary responsibility on Negus and the conductor, Tryon, but adds that "men do not ordinarily become careless, lose their sense of responsibility and wilfully disobey rules that they know are necessary for safety, unless the management of the company also becomes careless and permits violations to go unchecked. . . ."

He recommends the installation of automatic block signals, the adoption of a rule requiring each conductor to exchange signals with his motorman when approaching a meeting point, and other improvements.

The Commission adopts the report of Inspector Trumbull as its own and calls upon the company to exercise more care

in examining the records of the hours of service of men; to never permit men to operate cars who are not fully competent physically, mentally or otherwise and to report by September 18 whether it will accept and adopt these suggestions, and when they will be put in force.

RAILWAY REGIMENTS' TOBACCO FUND

In a short time circular letters will be sent out from the committee in charge of the raising of the Railway Regiments' Tobacco Fund asking railway supply concerns throughout the United States to subscribe to this fund. As announced in the *Railway Age Gazette* for last week, page 618, it is desired to raise for the nine existing railway regiments a total of 2,160 pounds of tobacco weekly, which, it has been ascertained, will cost \$1,080 a week. The appeal to the railway supply concerns will include the following:

Will you not "do your bit" in connection with this work by entering a subscription for your company on the enclosed card and send it to the undersigned at once? Each railway supply concern to which this letter is addressed is respectfully requested to subscribe \$10 a month for 15 months from October 1, 1917, to January 1, 1919, this subscription to be terminated at an earlier date should the war end before the date mentioned. Checks should be made payable to "John R. Washburn, Treasurer," and mailed to "Samuel O. Dunn, Secretary, Railway Regiments' Tobacco Fund," 750 Transportation Building, Chicago.

The committee in charge of raising the fund, of which F. A. Poor, president of the P. & M. Company, is chairman, estimates that if 450 railway supply concerns will subscribe the \$10 a month requested, a sufficient fund can be raised for providing "smokes" for all the members of the existing nine railway regiments. Additional regiments are now being raised but it will be sometime before they are raised and no effort is being made at present to provide for their probable wants. A list of the railway supply concerns of the country, which will be made as complete as practicable, is now being compiled and as rapidly as possible circulars requesting subscriptions from them will be sent out. Meantime, it is hoped that many supply concerns will not wait to be circularized but will send their subscriptions at once to the secretary who, in turn, will promptly turn the money over to the treasurer.

The members of the committee especially desire it should be understood that all the money raised will go into the Tobacco Fund. There will be no expense connected with the collection and administration of the fund since the concerns represented by the members of the committee have agreed to bear all the clerical, postage, stationery and other expenses incurred in collecting and handling the money.

Some subscriptions to the fund already have been made. It is probable that the first list of subscriptions will be published in the *Railway Age Gazette* and other interested publications next week, and the names of all donors will be published hereafter as their subscriptions are received. "Now is the time to subscribe!"

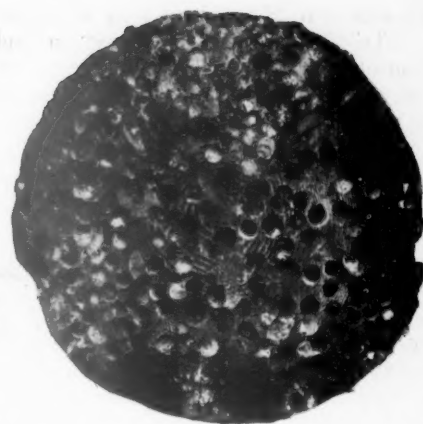
DEMURRAGE REGULATIONS IN IRELAND.—Revised charges and conditions as to freight car demurrage on the Irish railways went into operation on September 1. Two clear days are to be allowed for the unloading of cars containing coal and coke, and one day for unloading merchandise. A demurrage charge of 3s. (\$.36) per day for the first two days or portion of a day is to be made if detained beyond the mentioned time, and 6s. (\$.72) per day for each day after the first two extra days. Similar charges are to be made against shippers who order cars and then fail to load them within 24 hours after their receipt, or, if loaded, fail to order them away.



Teredo Destroys Improperly Treated Piles

Investigation of Worm-Eaten Douglas
Fir Sticks Discloses Inadequate and
Poorly Distributed Injection of Creosote

By Dr. Hermann von Schrenk
Consulting Timber Engineer, St. Louis, Mo.



Two Piles Destroyed by Teredo.

TWO sections of Douglas fir piling were recently received which were stated to have been treated with creosote and which had been in service about eight or nine years at Tacoma, Wash. Both of these showed that they had been treated with some black preservative. The piles were completely riddled by the teredo, not only in the central untreated portion of the piles, but all through the dark treated portion.

The piles were sectioned at various points, and a careful examination was made of the penetration as indicated by the color (after drying out the sections). This examination showed an average penetration of about 1 in. to 1 1/4 in. Here and there, however, the penetration was only nominal. At one or two points there was practically no penetration at all. A microscopic examination of the wood fibres at these

per cu. ft. or, for the whole pile, 2.2 lb. per cu. ft. The extracted oils were analyzed, and the average of these analyses gave the following results:

Specific gravity = 1.0151

Distillation:

210 deg. C.	1.3
235	6.8
270	33.5
315	21.9
355	24.3
Residue	11.5
Specific gravity 235-315 deg. C. at 38 deg./15.5 deg. C.	= 1.020
Specific gravity 315-355 deg. C. at 38 deg./15.5 deg. C.	= 1.081
Tar acids	= 5.2 per cent
Sulphonation 235-315 deg. C.	= 3.6 per cent
Sulphonation 315-355 deg. C.	= 2.0 per cent

GENERAL FINDINGS

The chemical characteristics of the preservative indicate that it is in all probability of strictly coal-tar origin; in other words, it has no water-gas tar or other adulterants. Some of the fractions are slightly at variance with the percentage usually found in straight creosote oil, but this is probably accounted for by the fact that in making the extractions certain percentages of the wood fiber and resinous contents normally found in Douglas fir were extracted with it. It was not thought desirable to separate these in view of the general close agreement of the analytical results with those commonly obtained for coal-tar compounds.

The amount of oil used as already shown was given by the two extractions as follows:

	Per cent by weight	Lb. per cu. ft. of treated wood	Lb. per cu. ft. based on whole pile
First extraction	34.0	10.88	3.32
Second extraction	22.3	7.04	2.20

These results indicate clearly that the amount of oil with which these piles were treated was very small. It should be remembered that treating specifications usually require a certain number of pounds per cubic foot, based on the total volume of the material treated. In other words, piles in the Puget Sound district, in order to give anything near proper protection, should have at least 15 to 20 lb. per cu. ft. In view of the fact that Douglas fir can be treated only on the outside, it will readily be seen that, according to the actual amount of oil injected, the portion which is treated would contain far in excess of 15 or 20 lb. per cu. ft.; in other words, the outer portion of the pile which is treated will practically be treated to refusal. This was certainly not the case with the two piles submitted for examination. The amount actually found is probably a little higher than was really the case, because, as stated above, there are probably certain percentages of resin and other extractable materials normally found in Douglas fir.

In view of the fact that these pile sections were immersed in salt water, and from past experience with oils found in piling after eight or nine years of immersion in salt water, we are of the opinion that this light quantity of creosote oil



Two Creosoted Douglas Fir Piles Treated After Being Air Seasoned

points confirmed the visual examination. Small globules of creosote oil appeared in the medullary rays and in an occasional fiber of the summer wood, but practically all of the wood fibers were white and showed no evidence of creosote oil penetration. The distribution of the holes made by the teredo showed the smallest holes in the creosoted portion, the holes increasing in size towards the center of the stick.

Borings were made at various points in the circumference of the piles. A visual examination of these borings indicated that there was apparently more preservative at certain portions of the circumference than at others. Two sets of borings were taken from the creosoted ring, and the oil was extracted from these borings. Using the weight of the dry wood as a basis, the first extraction showed 34 per cent by weight of preservative, or 10.88 lb. of preservative per cu. ft. Calculating the actual volume of the treated wood and taking the whole volume of the pile, the amount of oil per cubic foot, based on the volume of the whole pile, was 3.32 lb. The second extraction showed 22.3 per cent of preservative, based on the dry weight of the wood, or 7.04 lb.

actually found is fairly indicative of the amount originally injected. By this we mean that evaporative or leaching changes take place so slowly when creosoted wood is submerged that for as short a period as eight or nine years, such loss may be regarded as negligible.

While the penetration was fairly good at most points, there were numerous weak spots at the circumference where the penetration was extremely small. On the photographs there are points where practically no creosote oil is visible. Even the microscope does not disclose any.

Taking the foregoing facts as a basis, it would appear that the reason these piles were so badly decayed and destroyed by the teredo is probably two fold: (1) the amount of oil injected was entirely insufficient to give proper protection; (2) these piles were probably not correctly treated, because they would otherwise have given far better and more uniform penetration.

RECOMMENDATIONS

The lessons to be drawn from an investigation of this sort clearly establish that for successful resistance to the teredo, Douglas fir piles should, wherever possible, be air dried instead of being subjected to the usual boiling treatment. This will very largely obviate the leaving of vulnerable untreated spots in the circumference of the sticks and will at the same time insure a far greater depth of penetration and a larger volume of oil retained than is usually obtained. It has frequently been stated that air seasoning of piling on northern Pacific Coast points is not practicable. I regard this without foundation, however, because piles have been air seasoned in the Puget Sound district and the resultant treatment has been of such superior character that there can be little doubt as to the advantage to be gained by it. One of the photographs shows section of two creosoted Douglas fir sticks, cut 12 ft. from the end, treated after the piles had been thoroughly air seasoned and the very uniform complete penetration of the sap ring should be noted.

It furthermore indicates that our present system of specifying on the basis of so many pounds per cubic foot is a very poor standard for treatment of material like Douglas fir piles. Where a railroad goes to the expense of having material treated, it would be far better if a specification called for a certain depth of penetration irrespective of the quantity of oil injected to obtain it, and make the actual oil used in the treatment the basis of payment, having a possible restriction as to the upper limit of the oil allowable, such limit to be determined on as basis of experience.

It furthermore indicates that the inspection of piling of this character must be carried out by actual borings of a very large number of sticks, and that the method of inspection by which the oil quantity absorbed is judged by gage or other readings is not sufficient.

RAILWAY IN MOROCCO.—In connection with the bill now before the French Parliament for the construction of the railway between Tangiers and Fez, it is pointed out that there already exist 773 km. (480 miles) of railway in Morocco. These are lines actually operating and exclusive of railways under construction. All the lines now operating are narrow-gage (60 centimetres, or 2-ft. gage) military railways, which owing to diplomatic conventions with Germany could not be used for civilian or ordinary traffic up to the outbreak of the war in 1914. France, however, considers herself free from all diplomatic conventions made with Germany, and all lines are now open to ordinary traffic. The traffic receipts per kilometre for the whole of 1916 varied between £740 (\$3,626) and £935 (\$4,582). The proposed Tangiers-Fez line is to be of standard gage. The French Government proposes to give a concession for the whole of the standard gage lines (altogether 670 miles) to a private consortium.

THE FREIGHT CAR AS A FACTOR IN WINNING THE WAR*

By E. H. De Groot, Jr.

Chief of Division of Car Service, Interstate Commerce Commission.

To talk about cars is for me a work of love. My father was a young freight conductor when I was born and all of my life has been spent on or about a railroad. To me the freight car was early a thing of romance and poetry and for me it still holds its charm, notwithstanding a very intimate acquaintance with those perverse characteristics which the operating man finds so much and so often in evidence in his daily experience.

No less an authority than General Joffre has said that the present war is one of transportation, and we all recall the high tribute, as well as the tremendous charge that President Wilson uttered in his appeal of April 15 to the men who run the railways of the country, *** "upon whom rests the immense responsibility of seeing to it that transportation suffers no obstruction, no inefficiency or slackened power."

We must not delude ourselves with the idea that transportation can be furnished as it has been in the past, and that business can be conducted during the war as it has been heretofore. *** The transportation machine has not broken down, as some have asserted, and it is not going to break down. It is assimilating a tremendous aggregate of conglomerated offerings and grinding out more ton-miles than it has ever produced before. As a whole it is being run more efficiently than it has ever been run in all its history, but it must be run with still greater skill—skill progressively greater—as time goes on. * * * But I do not mean that the transportation machine will run without any shocks. On the contrary, I look for pounds and wheezes in many parts before the robins return, and what I want to emphasize is that, more and more, skill and devotion must be forthcoming to offset the increasing difficulties. The crowding of locomotive power, the scarcity of men and materials, the pressure of congested conditions; all these things will make for lower standards in many ways unless resolutely faced and fought; and lowered standards spell inefficiency. We must get the greatest possible output in ton-miles from every individual car. I say individual because I am a little suspicious of averages. They too often cover up disgracefully low accomplishment, and drag down those higher and better. * * * Transportation affects mansion and hovel, rich and poor, alike. It is vital to all. I make this elementary statement because I want to draw from it the conclusion that the business of transportation is one of dignity and necessity and that to serve in the transportation army in this time of national crisis is to enjoy opportunity for a splendid contribution to the cause of our beloved country.

I shall use very few statistics tonight, for my purpose is not to enlighten but to crystalize into adamant firmness your resolution to play the transportation game through to the end with the same spirit of devotion and sacrifice which we expect from Americans on the firing line in France. The Railroads' War Board has told us how the railroads could do more work with existing facilities. * * * In short, the duty of every man in railway service from the humblest to the highest has been made clear over and over again; and for the most part the response has been wholehearted and gratifying. The Commission on Car Service at Washington can give many encouraging examples of heavy loading, double-loading and even triple-loading of cars. Co-operation is an accomplished fact and to an extent which a few months ago would have been unbelievable. Not that the millennium has arrived, for there is yet much room for

*From an address before the New England Railroad Club, Boston, Mass., on October 9, 1917.

improvement on both sides, but very great progress indeed has been made.

I have a pet theory that when the correct answer to the transportation problem is finally worked out it will be found that it is good alike from both the railway standpoint and that of the shipper. Yes, and even beyond that; that the true interests of public and shipper and security-holder and employee are one and the same.

In the meantime, the railroad man and the shipper are each getting a better perspective and as they do so they are throwing fewer stones and doing more planning together. * * * I believe that the time is near when it will be necessary to determine what freight must move and what must be refused. However, the authority to effect this discrimination lies with the President under the priority law, and will undoubtedly be exercised with great care and wisdom.

The freight car has received more attention in the past few months than in all of its previous existence. Its empty mileage and ratio of empty mileage, average miles, repairs, loading, unloading, switching, detentions, billing, re-shipment, per diem rate—all and more have been the subject of much study and more discussion.

Great progress has been made. The pooling of box cars under the order of the Commission on Car Service was the greatest advance step taken since 1902 when per diem was adopted. Literally tens of thousands of box cars were actually redistributed to the producing districts by arbitrary order. It is impossible to estimate the increased efficiency which the country has already secured through these measures. Then the Esch law was passed and the Interstate Commerce Commission organized a new division. * * *

As indicated by the commission in its announcement, the Division of Car Service is working very closely with the Commission on Car Service and they are co-operating with us in a most helpful spirit, to the mutual benefit of both shippers and carriers. Your greatest opportunity lies now in speeding up the movement of cars. Watch the yards and terminals, eliminate the delays there, and half of the problem is solved. The price is eternal vigilance. In the last analysis the determining force in making the freight car the tremendous factor which it must be in winning the war is just the plain everyday man—agent and yard clerk and switchman; repairer and trainman and yardmaster—shipper and consignee; and you, and me, and a thousand others. Shall we not do our part? * * *

DISCUSSION

The discussion on Mr. DeGroot's paper was opened by W. C. Kendall, superintendent of transportation of the Boston & Maine, but now serving on the railroads' Car Service Commission at Washington. Mr. Kendall told of the satisfactory progress being made at Washington. The railroads have never worked so closely in co-operation with the Interstate Commerce Commission as now. Complaints of unsatisfactory car service are less numerous than ever before, and the railroad man's life is correspondingly pleasanter. Complaints of all kinds are still sufficiently numerous, however, to keep the transportation men from going to sleep; but, as has been so often observed in the past, a good many of the reported troubles are future and contingent, rather than actual and present. A certain Pittsburgh road, having put on a largely increased corps of inspectors, has succeeded in loading its cars of miscellaneous freight (not including coal and ore) from 53 per cent of their capacity to 88 per cent. A certain large shipper of cement, loading 255 cars of cement in one day recently, put 110 per cent of capacity into 254 of those cars. To the station agent and the ordinary shipper—to all having to deal with the freight car problem—the lesson of today is to follow up every station and every yard, every day, with a fine-tooth comb.

John W. Golden, traffic manager of the Keith Car Manufacturing Company, advocated the establishment of local distributive units. A railroad should be divided into such units, of a size which can be handled as a single proposition in a single day; and the distributor supervising freight car movements in this district should have telegraph or telephone communication, with every point, so as to eliminate completely all delay to messages or in getting answers to questions. This man also should be in constant wire communication with the car-record office of the road, and the car-record office should keep its data close up to the actual car movements at all times.

H. E. Astley, division superintendent of the New York, New Haven & Hartford, at Boston, said that some good work of this kind was already being done on his road. He commended the consignees for their hearty co-operation.

G. L. Graham, traffic manager of the American Woolen Company, Boston, referring to complaints that freight cars are often delayed because the revenue billing did not accompany the car, said that the New Haven road had already started a decided improvement in this matter, and cars coming from connections without revenue billing are not accepted.

In the scarcity of help now felt everywhere we feel the need of some improved apparatus for unloading bulk freight (such, for example, as soft coal) from gondolas which have high sides and no hoppers. Who will produce something of this kind?

The shippers of New England are alive to the situation and are ready to co-operate with the railroads in full loading of cars of miscellaneous freight. New England produces one-seventh of the manufactured goods of the country, and sends out freight in less than carload lots more extensively than any other region. At Lawrence, Mass., there is a plan for co-operation, in expediting shipments, by all the manufacturers in the city. The idea is to combine to send goods to a given city on a given day; all, for example, consolidating their shipments to Cleveland, or to Chicago, so that a full carload may be sent direct to destination. This plan is the outcome of severe losses by delays during the past year. At one time special action had to be taken to release 200 cars of westbound freight which had become blockaded at the Hudson river. In Manchester, England, there is now practically no railroad freight accommodation whatever for the large manufacturers, and to send their products to London they have to use automobiles. New England manufacturers are on the lookout lest their productivity may be diminished by causes which have been felt in Manchester. The co-operative plans of the railroads must be worked to their full extent. If the Boston & Maine, for example, is congested in its direct westbound routes, shippers will demand that goods be sent over the Rutland road, if thereby time can be saved.

L. A. Anthony, superintendent of car service of the Boston & Albany, told of the action taken on his road to expedite freight cars. His force of inspectors has been more than doubled. In spite of the best efforts a hundred cars were discovered, in two months, which had been so delayed that the demurrage bills on them amounted to \$25 or more on each car.

A. G. Thomason, manager of the New England Demurrage Commission, congratulated the railroads on the accomplishment of the long needed and long wished for reforms in car service now manifest on every hand. Mr. Thomason was formerly, for many years, in railroad service, and said he was curious as to the explanation of the recent so-called improvement in the matter of sending revenue waybills with cars. In his experience nobody had ever thought of sending revenue bills in any other way than to get them to destination with, or ahead of, the car.

S. E. Miller, acting superintendent of transportation of the

Boston & Maine, told of the effective co-operation of consignees at stations on his road. There are exceptions to this statement, of course, and to these particular attention is given, personal visits being made where necessary.

W. T. LaMoure, general freight agent of the Boston & Maine, reminded the meeting that the freight traffic men—now supposed by many persons to be doing nothing, because freight comes in faster than it can be dealt with—are helping to keep freight cars moving. The traffic men admit that they are the friends of the public; but the undisputed fact at the present time is that the public is heartily co-operating with the railroads; and the principal difficulty, where there is lack of this co-operation is that there is not a full understanding; the principal lesson for the railroad man who would improve such co-operation is to be always frank and aboveboard in dealing with the shipper or consignee, and in telling him your purposes.

Mr. DeGroot, closing the discussion, expressed his full confidence that the gains in transportation efficiency which are now being accomplished under the stress of war will not be lost. The improvements on which we are now congratulating ourselves are so valuable that backward steps will be impossible.

WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., October 9, 1917.

INCREASED RATE PROCEDURE

That the operation of putting into effect a new tariff containing an increased rate, fare, charge or classification hereafter is to be surrounded with considerable more formality and publicity than formerly, but that a tariff once filed will probably be less liable to disturbance as a result of protests and complaints, is indicated by the announcement made by the Interstate Commerce Commission of a proposed tentative order prescribing the procedure to be followed in securing its approval for the filing of a new tariff. The order, which will be the subject of a hearing at Washington on October 15, as briefly reported in last week's issue, is made necessary by the amendment to section 15 of the commerce act, which became a law on August 9, having been inserted on short notice while the bill to increase the membership of the commission was in conference.

The amendment provides that until January 1, 1920, no increased rate shall be filed except after having been approved by the commission, although such approval may, in the discretion of the commission, be given without formal hearing and in such case shall not affect any subsequent proceeding.

Since the law became effective, at a time when the members of the commission were away on their vacation, the business of filing tariffs has been pretty much at a standstill. Both tariffs and requests from carriers as to how they should go about obtaining the approval of the commission have accumulated in the commission files along with more or less frantic letters and telegrams from shippers excited by the knowledge that definite proposals to increase rates were in existence to which they had no access. Some idea as to how many tariffs have thus been held up may be gained from the fact that in the 12 months ending October 31, 1916, 106,442 separate tariff publications were filed by carriers and this was less by several thousand than the numbers filed during recent years. Tariffs in transit were taken care of by the commission by a blanket order of approval covering those forwarded prior to August 15 and since then the commission has issued notices of approval in some 22 cases, involving principally tariffs filed for the purpose of making corrections.

Heretofore new tariffs have simply been filed and, unless sufficient protest was made to cause the commission to suspend them, have automatically gone into effect. Under the

proposed order requests for approval of the filing of a tariff containing an increased rate must be made by application in a form set forth, and, according to the order:

"Such application must show the rates, fares, charges, and classifications, which it is proposed to increase, including rules or regulations affecting charges, as well as the nature and extent of the increase, the way in which it is to be effected, and the proposed rates, fares, charges, classifications, rules, and regulations of which approval is sought, and must also contain a complete and accurate statement of the reasons advanced by carriers in justification of the increases sought to be established. If the application embraces a number of increases they may be shown in an exhibit attached to and specifically designated in the application. This may be done by using a copy of the effective tariff and showing thereon in red ink the proposed increases, or by using a proof copy of the proposed issue and inserting thereon in red ink the existing rate, fare, etc., or by showing both the existing and proposed rates, fares, etc., in a memorandum either typewritten or manuscript, attached to the application as an exhibit.

"If the existing rates, fares, etc., are under investigation in suspension proceedings, or under attack in any formal proceeding pending before the commission or if the proposed rates, fares, etc., are predicated upon the commission's findings in any adjudicated proceeding, applications should so indicate by proper reference to the docket numbers of such cases. If the existing rates, fares, etc., are protected by any pending fourth section application reference must be made thereto. "If the commission declines to approve an application and the carrier presents a new application based upon new facts in justification of the proposed increases, such modified application should specifically refer to the previous application and order number declining the same.

"Whenever it is thought that maps would be helpful in presenting the rate situation, they may be employed for purposes of illustration, be designated as exhibits and be attached to the application.

"If the increases sought to be established bear a relationship to the rates, fares, etc., of another carrier or carriers, or to and from other points or localities, or if they bear an established relationship to rates on other commodity or commodities, or if increases are proposed for the purpose of removing discriminations or fourth section violations, applications should state the fact and definitely explain such relationship or fact.

"In instances where the commission has in formal proceedings approved specific rates, fares, charges or classifications it is not necessary to secure further approval, but schedules containing such rates, fares, etc., should specifically refer to the authority therefor in the manner required by Tariff Circulars No. 18-A and No. 19-A or later issues.

"Five copies of each application should be presented to the commission, but where it requires more than 20 pages to set forth the increases sought to be made, it will be sufficient to present two copies of the exhibit referred to and made a part of an application.

"Each application must show the names of the carriers for and on behalf of which it is made, or if made on behalf of all carriers parties to a particular tariff or classification, may refer by I. C. C. number to such tariff or classification, and must be over the signature of an executive officer, a responsible traffic officer or a duly authorized attorney and agent, specifying his title, and must be sworn to before an official qualified to administer oaths."

While these requirements will naturally make it more difficult than at present to get an increased rate on file, and will also add considerably to the work of the commission, it would seem a matter of course that after the commission has had an opportunity to analyze a proposed increase in advance and perhaps to hold a hearing on it, there will be

less likelihood of its being suspended after approval for filing is given, although if additional facts should be brought to the attention of the commission by shippers to warrant such a procedure, there is nothing to prevent such a suspension.

The commission has gained the power, if it deems it wise to exercise it, of absolutely preventing even the filing of an increased rate, but as it already had the power to prevent such a rate becoming effective, the real change in the situation in this respect is apparently rather unsubstantial.

Shippers have been worrying considerably for fear that, the commission once having passed on an application for approval of the filing of a tariff, it would be reluctant to reconsider the same tariff later, and have been advocating some method by which they can be enabled to know the contents of the carriers' applications in time to make protest. In order, therefore, to apprise interested shippers of the applications presented by carriers for permission to file increased rates, the commission calls attention to the fact that the proposed order requires that five copies of each application shall be presented to the commission, and, in all cases, at least a duplicate copy of all exhibits incorporated therewith. According to the plan, one application containing copies of all the exhibits will be open for consultation by the public in the commission's public tariff file rooms and there will be laid daily on the table in the press room and also posted on the secretary's bulletin board, notices indicating applications received to file tariffs carrying increased rates, such notices indicating in brief the tariffs and territory affected.

The commission also has in mind arranging to mail weekly to accredited representatives of organizations of shippers, chambers of commerce or boards of trade similar lists of the applications received, indicating those that may have been acted upon.

The commission also expresses the view in its announcement that carriers should consult freely with shippers who may be interested in proposed increases. It believes that the course now pursued by the classification committees in that regard, by which hearings are held for the benefit of shippers on proposed changes, following the commission's suggestions in its report on the Western Classification Committee case, has resulted in a better understanding between shippers and carriers, and that similar conferences on prospective changes in rates, fares, or charges will serve to reduce or remove much of the friction and difference of opinion hitherto existing between shippers and carriers. It is also thought that conferences between the parties will greatly simplify and expedite the disposition of applications by the commission, and will have a tendency to reduce protests and requests for suspension, and the number of formal complaints filed with the commission.

NEW COMMISSIONERS CONFIRMED

The Senate on October 4 confirmed the President's appointments of Robert W. Woolley, Clyde B. Aitchison and

George W. Anderson as members of the Interstate Commerce Commission and the appointments became effective at once. Early announcement is, therefore, expected of the reorganization of the commission into divisions to handle the various departments of the commission's work, such as rates, valuation, accounting, etc. Senator Hoke Smith of Georgia, who was absent the day the nominations were acted upon, made an unsuccessful effort on the following day to have the Senate reconsider its confirmation of Mr. Woolley, contending that he had had no experience to qualify him for the position. A photograph of Commissioner Aitchison is reproduced herewith. Biographical sketches of the new commissioners were published last week.

* * *

NEWLANDS COMMITTEE TO HOLD HEARINGS IN SAN FRANCISCO

As predicted last week, the Congressional Joint Committee on Interstate Commerce, of which Senator Newlands of Nevada is chairman, has definitely decided to hold a series of hearings in San Francisco during the Congressional recess, in connection with its general inquiry into matters pertaining to railway regulation. Although Congress passed the provision in the urgent deficiency bill continuing the committee for another year and providing for a report by December 30, the committee desired to take advantage of the opportunity to hear from the far western people who had signified a desire to testify. As one member of the committee expressed it, it is the purpose on this trip to hear from those who do not enjoy the privilege of free transportation to Washington, which the railroad men have, and it is expected that the witnesses will consist principally of shippers and state commissioners, as most of the testimony heard in Washington last fall and spring was on behalf of the railroads. The plan is to hold hearings for



Clyde B. Aitchison

about three weeks at the Palace Hotel in San Francisco, beginning on November 1. If there is sufficient time available before the opening of the regular session of Congress in December, one or two hearings may be held at other places on the way back.

The committee at a meeting in Washington just before the adjournment of Congress accepted the resignation of William C. Adamson as vice-chairman, effective on December 1. Judge Adamson, who is chairman of the House Committee on Interstate and Foreign Commerce, is to leave Congress to become a member of the board of appraisers of the Port of New York. Thetus W. Sims, who will succeed him as chairman of the House Committee, was elected vice-chairman of the Joint Committee.

TRANSPORTING THE COTTON CROP

The Commission on Car Service has recently been giving especial attention to the problem of transporting the cotton crop in such a way as to handle it expeditiously and without

waste of cars, at a time when the southern cotton producing communities are handling an unusual amount of other business, requiring additional cars, because of the location of so many military camps in the southeast. It is estimated that this year's crop will require the railroads to move 18,000,000 bales, including the duplications incident to reshipment, and that if loaded to the ordinary average of 55 bales to the car this would require over 320,000 cars, while if loaded to an average of 75 bales a saving of 100,000 cars may be effected. Cotton, because of its bulk, rarely reaches the weight capacity of the cars in which it is shipped and therefore any changes which will place a larger number of bales in a car will materially assist in solving the transportation problem. On September 28 a circular was sent by the Railroads' War Board to the presidents of all the cotton-carrying roads calling their attention to a more detailed circular sent by the Commission on Car Service to the chief operating officers emphasizing the opportunity presented for intensive loading, prohibiting the shipment of cotton in quantities of less than 65 bales to the car and requiring as many more to be loaded as the size of the car furnished will permit. In complying with this the Southern Railway has issued a circular to put all concerned on notice that it will require the loading of 75 bales of compressed cotton in all standard 36-foot cars. The circular also includes drawings showing the proper method of loading to stow 75 bales in a car.

A conference of cotton growers, merchants, brokers, warehousemen and compressmen with representatives of the transportation companies was held at Washington on October 5 to consider the problem of transporting cotton from the South to New England, in view of the fact that many of the coastwise boats, which usually carry about half of this traffic, have been withdrawn by the government. Howard Elliott, of the Railroads' War Board, addressed the meeting, explaining the difficulties the railroads are facing in attempting to produce enough transportation to go around and outlining the work of the war board. Mr. Elliott laid stress on the necessity for high density compression, in order to secure heavy loading and expressed the opinion that with the full co-operation of the shippers the railroads would be able to take care of all the most essential transportation, although he said that there is a strong chance that some things cannot be taken care of. The conference adopted resolutions recommending that every effort be made to put the cotton in such a condition as to make possible the maximum loading.

THE RAILROAD PROBLEM

Conditions which are handicapping the roads in their effort to produce a maximum of transportation were explained in Mr. Elliott's address and also in a letter written by Fairfax Harrison, chairman of the Railroads' War Board, in reply to an inquiry by Senator Newlands, which was published in the Congressional Record. Mr. Harrison said in part:

"Data collected by direction of this committee indicates that on April 1 there were approximately 102,000 new freight cars under order for American railroads. Recently, in response to inquiries, it was ascertained that there were approximately 3,015 new locomotives under order. Some progress has been made in completing and delivering these cars and engines to the railroads, but progress has been slow, and will doubtless continue so, while few new orders will be placed by the railroads under the existing pressure for raw materials and the delay in securing steel and other manufactured parts. Thus the capacity of all the plate mills in the United States is 1,850,000 tons. We are advised that the government's program for the coming year will require about 1,600,000 tons of such plates. The needs of the railroads in plates merely for repairs to locomotives and cars during the coming year will be 275,000 tons. Orders for new locomotives, rail, and other railroad equipment for use abroad by the United States and the allies, which have been given preference to the needs of our railroads at home, are also delaying our deliveries. This presents one of our most serious problems in the outlook for the next 12 months.

"Through the efforts of this committee and the active co-operation of the railroads of the country, and, in large measure, of regulating authority, national and state, as well as the shipping interests of the country, much has been accomplished to increase the efficiency of the existing equipment.

"It is impossible to make definite reply to your inquiry as to the adequacy of the present equipment, for the reason that we are without definite information as to the volume of additional transportation which the re-

quirements of the government and our allies may still add to the commercial traffic of the country. We have viewed with much concern the reduction in available coastwise tonnage, which formerly handled large amounts of traffic by water from one part of the country to another. As a result the volume of rail transportation has in certain districts of the country been unusually increased, and if more coastwise ocean tonnage is taken by the government an acute condition may result, particularly in the movement of coal and cotton to New England.

"The continued increase of the efficiency of the railroads depends largely upon the delivery of the cars and locomotives now on order to replace those worn out or destroyed from time to time and the regular receipt of rail and steel products for repair purposes.

"These conditions are vital to the continued upkeep and necessary expansion of the carriers, and without adequate attention to them it is inevitable that the railroad machine of the country will in time halt and in some degree fail to meet the requirements imposed upon it. This committee has from time to time since its formation given expression to its concern on this subject, and, in view of your inquiries, I do not hesitate to direct your attention to the necessities of the railroads in these particulars.

"You further inquire whether the increase in volume of transportation has been sufficient to relieve the apprehension of the railroads that the considerable increase in operating expenses would hamper them in the maintenance and development of the necessary facilities for the service of the public. It is difficult within the reasonable limits of a letter adequately to reply to this inquiry, but public reports of results of operation show that the tendency of heavy and continuing increase in operating expenses on many important lines is exceeding the increase in gross revenues through increased traffic.

"Preliminary returns from 175 railroads, covering the United States as a whole, for June, 1917, show net revenue of \$110,321,241, as compared with \$99,901,700 in June, 1916. For the six months ended June, 1917, net revenues from railway operations were \$528,233,173, as compared with \$530,362,415 for the corresponding period in 1916. For the eastern district net revenues from railway operations for the six months ended June, 1917, were \$197,630,024, as compared with \$230,731,415 for the same period in 1916. In the southern and western districts the six months' figures, as well as those for the month of June, 1917, still show increases in net revenues, but reports of later operations in July and August on some important lines in the west indicate a decline in net revenues.

"This constitutes no present bar to the efficient operations of the railroads, but if the prospects are, as railroad managers believe them to be, that this tendency may increase, then, to the extent that it does, it will increasingly limit the ability of the railroads out of income to maintain and develop their facilities for transportation service. This current tendency to establish expenses on a higher level than ever before is what gives railroad managers their gravest concern at the moment. The present large volume of revenues may not always obtain: when it drops the ability to curtail expenses proportionately is limited by conditions over which the railroad manager has no longer any vestige of economic control. Furthermore, these special conditions, taken in connection with the general conditions affecting the money markets of the country, with which you are familiar, have made it today difficult, if not impossible, for even the most favored railroads to raise new capital: the sale of long-term bonds is apparently out of the question excepting at heavier discount than prudence will permit, and the issue of new stock upon any reasonable terms is not within the power of any company. Short-term financing is apparently the only recourse for new capital; under present conditions this method requires the payment of high rates of interest and involves early refinancing, which under the present outlook is an unsatisfactory and, in some respects, a dangerous method of supplying the capital needs of the railroads."

Mr. Elliott showed, among other things, that since the organization of the War Board, something like 141,000 empty cars have been distributed, that the increase in bituminous coal handled in May, June, July and August was 25.2 per cent, while the increase in anthracite handled from January to August 31 was 17.18 per cent, that up to the evening of October 2 the railroads had moved 728,010 of the National Guard, the National Army and the Regular Army, and that passenger train service has been reduced by about 25,000,000 train miles, saving about 1,500,000 tons of coal and releasing about 3,000 men for other work. From May 1 to October 1, he said, 128,000,000 bushels of grain have been sent over to the Allies.

"This movement of putting all the railroads in the country under this so-called War Board is of interest in another way than simply in its aspect of giving a higher efficiency for the use of the people of the United States." He said. "I believe that after the war is over we are going to see the greatest business in the United States that we have ever seen. It may not come the first year, but it is coming.

"Some say that the putting together of the railroads the way we have this year is an argument in favor of government ownership, and that that is what it means. I do not agree with that. I think it means that the splendid initiative of the American business man, that has built up this great transportation system that is today doing 20 to 25 per cent more than it ever did before, even under the complicated conditions that confront all of us—it means that the splendid

initiative of the American business man, if not too much fettered by small and nagging restrictions and allowed to go ahead, can do more for the expansion of American business and the expansion of the country than we could possibly obtain by governmental ownership. I say that because that is one of the great problems that very likely will develop out of this war, and you gentlemen who depend upon a successful transportation system are men who will have to help decide that great question by such views as Congress gets from its constituents all over the United States."

ILLINOIS PASSENGER FARE CASE

The Illinois passenger fare cases, involving the conflict between the Illinois 2-cent fare law and an order of the Interstate Commerce Commission requiring the railways of Illinois to remove the discrimination against St. Louis, Mo., and Keokuk, Ia., and finding that 2.4 cents per mile is a reasonable rate, were argued in the United States Supreme Court on Monday, October 8, by representatives of the roads, the Interstate Commerce Commission and the state. Briefs were filed on behalf of the roads by Silas H. Strawn, Robert B. Scott and A. P. Humburg, on behalf of the Interstate Commerce Commission by Joseph W. Folk, its chief counsel, and on behalf of the state authorities by Attorney General Brundage and his assistants, George T. Buckingham and J. H. Wilkerson. Two cases were heard together, an appeal by the railroads from a decision by Judge Landis of the federal court for the northern district of Illinois, dismissing for want of equity their petition for an injunction to restrain the state authorities from preventing their compliance with the commission's order, and also a cross-appeal by the state authorities. Mr. Strawn, in the opening argument for the carriers, contended that the rate of 2.4 cents a mile, found reasonable by the commission, is not subject to review by the court; that if there is any conflict between the state law and the commission's order the federal authority is paramount; that if the state wished to attack the commission's order its forum was in the federal district court at St. Louis, and that the scope of the commission's order to remove the discrimination is broad enough to require advancing the Illinois fares to 2.4 cents.

Mr. Buckingham, for the state, endeavored to keep the case outside of the doctrine of the Shreveport decision by arguing that the commission's order is too vague and indefinite to serve as a justification for disregarding the Illinois statute. He ridiculed the claim of the carriers that it is necessary to advance fares between all points in Illinois to remove the discrimination found, and contended that while the order did not apply to all points its description of the points to which it applies is indefinite. If the order does apply to all Illinois points, he urged, it was beyond the power of the commission to make for lack of evidence, because the commission had not found that the disparity in state and interstate fares worked any injury to St. Louis.

Mr. Folk supported the railroad contention as to the scope of the order and contended that the commission has the power to compel the removal of a state discrimination against interstate commerce.

LIGHT RAILWAYS FOR WARWICKSHIRE.—In connection with the ironstone development in South Warwickshire, England, an application is being made to the Light Railway Commissioners for an order to form a company to be called the Edgehill District Minerals Light Railway Company for the purpose of constructing a series of light railways connecting the Stratford-on-Avon & Midland Junction Railway with sites in the parishes of Burton Dassett, Radway, which lies at the foot of the Edgehills, Rotley, Upton, Horley, Shinnington and Wormington. The new line of railway from the Great Western at Banbury to the Hanwell and district iron ore-fields is being rapidly constructed.

POWER PLANT SUPERVISION ON THE BALTIMORE & OHIO

At this time when railroads are confronted with the problem of operating at maximum efficiency and economy, during an acute shortage of labor, they could not do better than thoroughly to study the operation of their power plants. This is an important field full of possibilities hardly touched by the average railroad. For example, how many railroads know to a drop how much of each kind of lubricant machines in power plants should take, and if they are consuming more or less than that amount? Do they know that proper attention is being paid to the cleaning of boilers, to the repair of tubes, and do they know that the boiler settings are watched and cared for? Do they know what amount of fuel is consumed in each plant and do they know that these amounts are what they should be, and what is most important, perhaps, do they know that the methods of operation and maintenance in all plants are uniform and in accordance with properly determined standards?

There are two general methods of providing for supervision of railroad power plant operation and maintenance, viz.: divisional or departmental. Under the purely divisional system each local terminal organization operates and main-

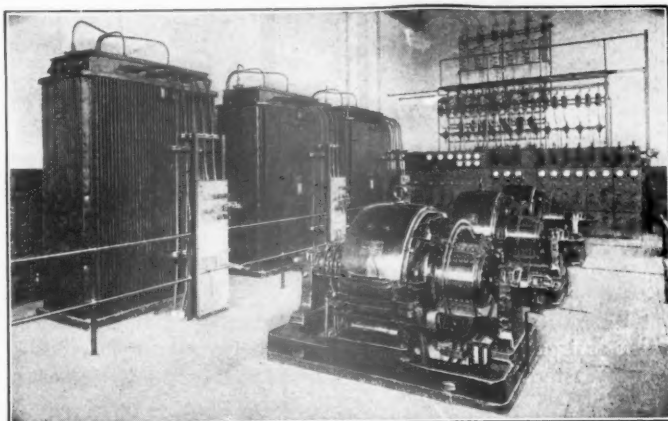


Fig. 1—View of the Switchboard Room in the Curtis Bay Power Plant, Baltimore, Md.

tains its power plant, while under the purely departmental system the operation and maintenance of all power plants over the entire system come under the direct general control of one officer of the company. The inherent fault of the divisional method is that it results in a poor load factor because if the organization is equipped to do the necessary maximum amount of work it is too large when the work is at a minimum. On the other hand, if the supervision is purely departmental, it becomes unwieldy as the organization grows, until finally the supervision of detail becomes impossible. The power plant organization on the Baltimore & Ohio is a combination of the good points of both methods.

Efficient power plant operation requires primarily the cooperation and live interest of every employee, the keeping on hand of a minimum and yet adequate supply of materials and a system of supervision which watches every detail in such a way that the results obtained by each power plant will be comparable with those obtained by all the others. This last requisite is the most difficult to accomplish, but the Baltimore and Ohio has effectively overcome all present existing difficulties by establishing one man control over all power plants on the system. To the man in the field it is usually apparent that a certain piece of work must be done, but it is not always so apparent just how it shall be done to the best advantage of the organization as a whole.

The diagram (Fig. 3.) illustrates part of Baltimore & Ohio

organization which covers power plant supervision. In making a study of this diagram it should be borne in mind that it is the policy of the organization not to make hard and fast rules concerning from whom a man should receive orders or to whom he should give them. It might appear from this that the system is weak, but it will be evident by a careful

black lines in the diagram indicate the order of the pay roll and the order of first hand instructions. The dotted lines indicate the supervision of methods and practices. The electrical engineer also has the power to issue other instructions directly to the five district power plant supervisors and in addition they meet him in council once each month.

REPORTS

With the view of making practice uniform, report blanks and bulletins are issued by the electrical engineer at Baltimore. The standard log sheet made out by the power plant engineer is a report which furnishes information regarding the operation of the boiler and engine room, also a record of fuel and supplies received. The form also gives sufficient information regarding the output of each generator to enable the electrical engineer's office to draw a maximum load curve each month. At the end of the month the report is signed by the power plant engineer, is approved by the master mechanic and sent to the electrical engineer.

From information shown on the power plant time cards and material cards the division accountant prepares a condensed statement, which is sent to the office of the electrical engineer each month with copies to the power plant supervisor and other local supervising officers. In the electrical engineer's office the information is boiled down, reduced to a comparative scale, assembled with the data received from all the power plants in the several districts, and made up in blueprint pamphlet form known as the general power plant statement. This not only contains the cost of operation, fuel consumption, cost of supplies and cost of labor for the month, but also includes the record for the previous month and the average for the year up to date. Copies of the statement are sent to the following: Vice-president in charge of operation and maintenance, general superintendent of motive power, two superintendents of motive power, the electrical engineer, his assistant and his statistician, the five general master mechanics, the five power plant supervisors, all master mechanics, all superintendents of shops and all power plant engineers. By glancing at this statement it is easy to tell if the operation in a certain power plant is improving or

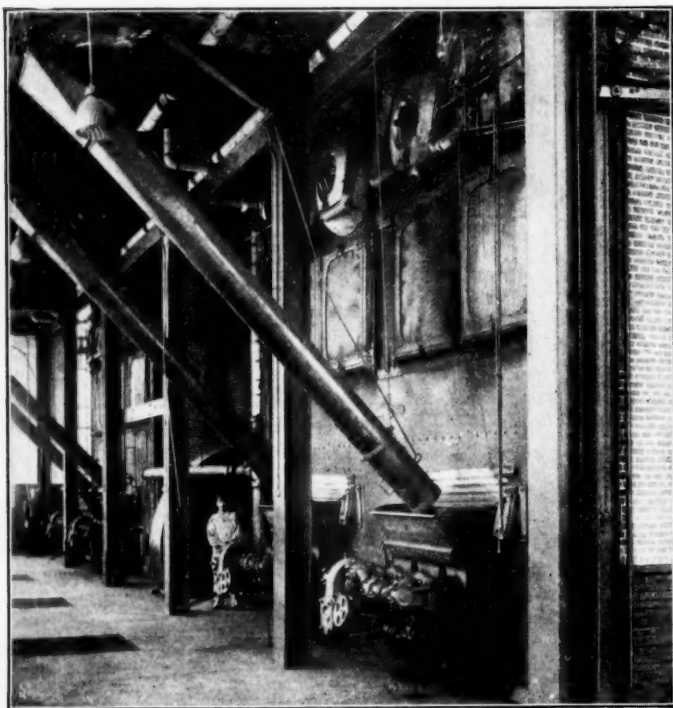


Fig. 2—Automatic Stokers and Coal Chutes in Boiler Room, Curtis Bay Power Plant

study of its organization that jurisdiction does not conflict. The railroad is divided into two main parts—Eastern Lines and Western Lines. The Eastern Lines are split into three

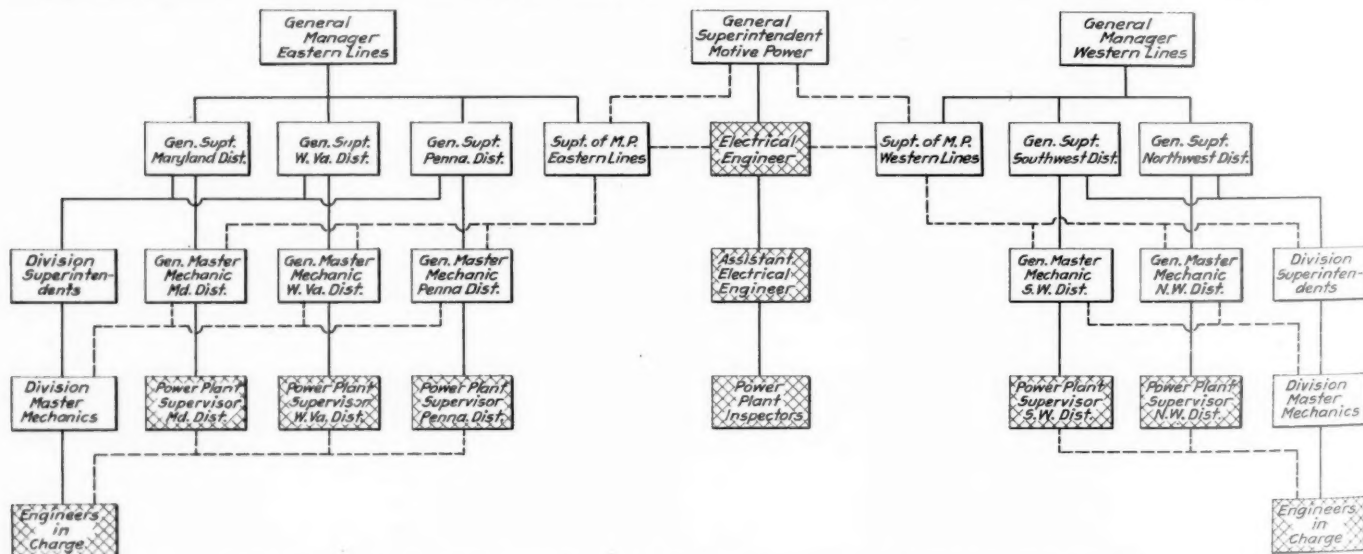


Fig. 3—That Part of the Baltimore & Ohio Organization Having to Do with Supervision and Operation of Power Plants

districts, namely, the Maryland district, the Pennsylvania district and the West Virginia district. The Western Lines are split into two districts, the Southwest district and the Northwest district. A district power plant supervisor attached to the staff of the general master mechanic is placed in each one of the five districts. These men receive instructions regarding the work to be done from the general master mechanic and receive directions regarding how and when it shall be done from the electrical engineer. Thus the full

falling off and to compare it with the operation of any other power plant on the system.

USE OF BULLETINS

With the system developed as outlined above, J. H. Davis, the electrical engineer, was confronted with the problem of obtaining the co-operation of every employee, and of developing a school whereby every employee could and would learn how to bring power house operation up to a maximum effi-

ciency. He conceived the idea of sending out useful information and instructions in the form of short bulletins, couched in language understandable by the average fireman and engineer. It was also considered essential to start at the bottom and have the first bulletins cover information of a fundamental nature. The subject matter of each bulletin is the result of careful study and thorough investigation by specialists.

In a broad way the objects of the series of bulletins are: (a) To bring about a better understanding of the subject of steam generation and its utilization; (b) to point out the causes of losses, preventable and unpreventable; (c) to show how better results may be accomplished and how maximum operating economy may be insured.

Bulletins were also issued to cover repairing, inspecting and testing of stationary boilers, as well as the operation and maintenance of power plants in general. All bulletins are as concise as possible, and the use of technical terms is avoided.

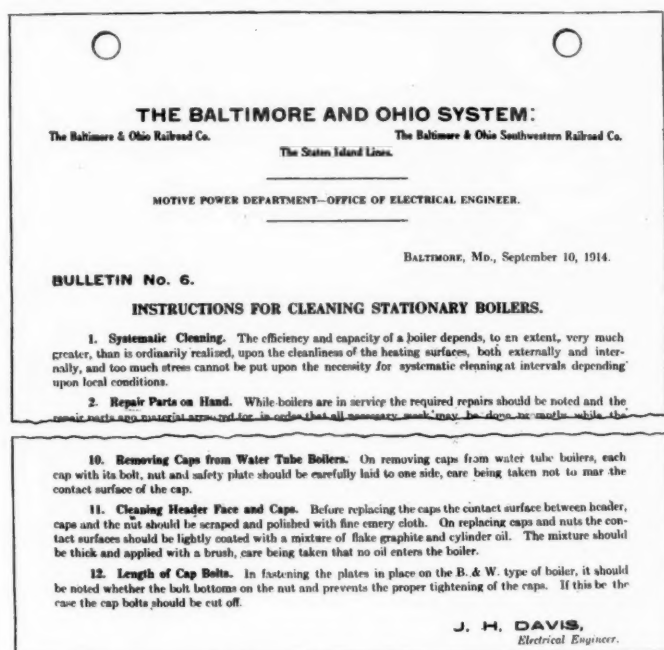


Fig. 4—Sample Copy of Instruction Bulletin Sent Out by the Electrical Engineer

They are of uniform size and are arranged for insertion in loose leaf binders. A copy of one of the bulletins issued is shown in Fig. 4.

Another of the bulletins contains the following information: "As provided in Circular S-2, dated July 13, 1912, the electrical engineer's approval must be obtained before installing steam and air lines or making renewals of existing lines." It is apparent that adding on steam or air lines indiscriminately will eventually overload the power plant and impair all of the previously existing services. Furthermore, the approval of a competent engineer will insure that the work will be done in accordance with the best practices. If it is a case of renewal of an existing line, because of machinery which is to be installed, it may be desirable to change the size of the line or to place it differently. The engineer is the man in the position best to foresee such eventualities.

The following are the titles of the bulletins issued to date:

- No. 1. Generation and Use of Steam from Stationary Boiler Plants.
- No. 2. Rules for the Operation and Care of Stationary Boilers.
- No. 3. Rules for Testing, Inspecting and Cleaning Stationary and Portable Boilers.
- No. 4. Power Plant Losses.
- No. 5. Operating Instructions for Jones Underfeed Stokers.
- No. 6. Instructions for Cleaning Stationary Boilers.
- No. 7. Repairs to Stationary Boilers.
- No. 8. Masonry in Boiler Settings and Furnaces.
- No. 9. Care, Maintenance and Operation of Electric Motors and Controllers.

- No. 10. Hand Firing Soft Coal Under Power Plant Boilers.
 - No. 11. Pipe Covering.
 - No. S-2. Operation and Maintenance of Lighting and Power Plants.
 - No. S-8. Numbering of Stationary and Portable Boilers.
 - No. S-9. Rules for Testing, Inspecting and Cleaning Stationary and Portable Boilers.
 - No. S-13. Extension and Renewals of Steam and Air Lines.
 - No. S-17. Reporting of New Installations, Transfers, Renewals and Scraping of Power Plant and Electrical Machinery.
 - No. 20. Fusible plugs—Stationary Boilers.
- Bulletin No. S-9 annulled and superseded Bulletin No. 3.

A reference book on "Steam—Its Generation and Use" was furnished each power plant. In addition to requiring power plant employees to familiarize themselves with the bulletins they are required to read portions of the reference book from time to time. The bulletins are followed by personal conferences with those engaged in the production and utilization of steam from stationary power plants, the idea being to work out in each plant the best and most economical operating methods. In this way each employee receives, almost in spite of himself, information quite as valuable to him as to his employer. The information is mailed under personal cover to each individual interested and is given out in small doses so that the men pick up and read the bulletins almost as easily as they would a newspaper. Almost without exception they have taken a lively interest in the educational campaign with excellent results. It is of interest to note that, although the photographs in Figs. 1 and 2 were taken without a preparatory cleaning up, the plant presents an exceptionally orderly appearance.

About a year ago, due to conditions caused by the war, some trouble was experienced because of firemen leaving to accept more attractive jobs. This resulted in a temporary shortage of that class of labor. This difficulty has been partially overcome by installing mechanical stokers, but it is apparent that this improvement does not constitute a complete remedy.

WHAT THE SYSTEM HAS ACCOMPLISHED

As an example of the results which can be obtained by proper supervision of power plants, the following incident is cited: The reports from a certain power plant indicated that the consumption of lubricating oil was abnormally large, and in spite of the best efforts of the engineer in charge the consumption continued to be excessive. The district power plant supervisor was sent to the plant and found that the engine was using the minimum amount of oil required to keep the bearings cool. Knowing that something must be wrong, he drilled into the foundation and found the sand in the center saturated with oil. This led to the discovery of a small crack or fissure in the bed plate casting. After the crack was closed by electric welding the oil consumption became normal. It was only through proper supervision, which required accurate reports, that the detection of such a leak was possible.

Although the lubricating oil now being used in all of the 40 power plants is of a better and more expensive grade than that formerly used, estimates indicate that the organization, in one year, has greatly reduced its total expenditures for this item.

It is common knowledge that shop output and engines despatched have increased abnormally during the past year. In addition to this the Baltimore & Ohio has increased the load on a number of its power plants by installing yard taps from the compressed air lines so that trains will already be "pumped up" when the engine takes hold of them. In spite of these increases, the consumption of coal in the power plants was only one per cent more during the fiscal year ending July 1, 1917, than it was the year previous.

Briefly the method of power plant supervision used by the Baltimore & Ohio insures that all operation and maintenance is in accordance with the best practices, that unnecessary work is not done, and, what is of greater importance, it commands the interest and co-operation of each and every employee.

General News Department

The annual convention of the Railway Real Estate Association, which was to have taken place this month at Duluth, Minn., has been postponed for one year on account of the war.

Switchmen on the Elgin, Joliet & Eastern, who struck on September 27, for a 50-per cent increase in wages, returned to work on October 6 and 7 without having their demands granted either in full or in part.

The Supreme Court of the United States has declined to review the decision of the lower court in which the Northern Central was fined for paying rebates to the Mineral Railroad & Mining Company on shipments of coal.

The United States Civil Service Commission announces examinations, November 21, for accounting and statistical clerk, men only, for positions in the Division of Statistics, Interstate Commerce Commission, also the Division of Valuation. Salary, \$1,200 to \$1,620. Applicants must be from 21 to 45 years old.

In the shops of the Grand Trunk at Stratford, Ont., the female employees have been directed to wear uniforms; that is to say, overalls. This is to lessen the danger of accident by catching clothing in machinery. These women for some time have been required to wear caps while at work, some of them having been injured by having their hair caught in drills.

In the urgent deficiency appropriation bill, passed by the Senate on October 3 and by the House on October 4, the appropriation for the transportation of the army and its supplies was fixed at \$375,000,000 by the action of the conferees. In the original House bill the proposed appropriation was \$350,000,000; the Senate increased it to \$413,000,000 and the conferees adopted a compromise.

James Simpson, master mechanic of the Northern Pacific at Livingston, Mont., advises that 39 women are now employed at the roundhouse at Laurel, Mont., Livingston, Bozeman, Whitehall and Butte, in the capacities of roundhouse foremen's clerks, coach cleaners, wipers, sweepers and turntable operators. The majority of the women so employed are rendering very satisfactory service.

When Joe Willet, a tourist conductor in the employ of the Chicago, Burlington & Quincy, stepped from the train at Boston, Mass., on October 3, he completed his three hundredth round trip between Boston and Los Angeles. He takes a party from Boston across the continent to San Francisco and Los Angeles every 21 days. He estimates he has traveled 4,000,000 miles, a distance equal to 1,600 times around the world.

Up to date 33 employees in the valuation department of the Chicago & North Western have entered army service. Those who had voluntarily entered military service from the North Western engineering department up to August 15 included one assistant engineer, four computers, one construction accountant, one draftsman, 12 instrument men, one assistant pilot, four rodmen, two recorders, three tapemen, and two stenographers.

The Chicago, Rock Island & Pacific, which recently prepared a colored map of the United States showing the location of the various encampments, announces that its first issue of over 100,000 has been exhausted and that it is reprinting the map in order to meet the continued demand for it. The Rock Island also granted permission to the Chicago Tribune to republish the map as a colored supplement in its Sunday issue of September 2, which resulted in a distribution of 650,000 copies.

The proceedings of the conference on social insurance which was held at Washington last December, under the auspices of the International Association of Industrial Accident Boards, have been printed in a thick volume of 935 pages and issued as Bulletin No. 212 of the Bureau of Labor Statistics, Department of Labor. The conference was participated in by a large number of well-informed speakers from the principal departments of industry which are interested in accident and health insurance.

The St. Louis-San Francisco, on October 1, granted increases in wages, ranging from 8 to 10 per cent, to station agents, telegraph operators and other station employees, yard clerks and clerks in the general offices at Springfield, Mo., as well as clerks in the division offices, who had not been granted an increase since January 1. The 10 per cent increase was granted to those employees who received only a 4 per cent increase in August, 1916, while the 8 per cent increase goes to those who received a 6 per cent advance at that time.

The Pennsylvania Railroad (all lines east of Pittsburgh and Erie) reports that the average freight carload in July of this year was 33.51 tons, as compared with 29.57 tons in July, 1916, an improvement of more than 13 per cent. This was equal to a saving of 81,268 cars in the number required to handle the traffic of the road during July. This saving not only enabled the road to handle a much larger amount of commercial business, but also aided materially in rendering efficient military transportation, especially in the carrying of materials for the construction of the various cantonments. It is believed that the results for August and September will show an even greater improvement in car loading.

A Board of Conciliation, which has inquired into a dispute between the Canadian Pacific and its station agents, telegraphers and linemen, recommends that the pay of these classes be increased not less than 18 per cent, and that the pay of train despatchers be increased not less than 12 per cent. It is recommended that the road discontinue the payment of higher wages to men in western Canada because of the higher cost of living in that part of the Dominion, living conditions in the east and west being now more nearly equal. The employees had asked for an increase of 25 per cent, citing statistics compiled by the Department of Labor showing that, since 1913, the cost of living had advanced more than 30 per cent.

A strike of clerks of the Nashville, Chattanooga & St. Louis, which had made considerable disturbance for over a week, was settled at Nashville on October 8 by an agreement to have the differences discussed later. The company agreed, in putting the men back at their work, to pay them for the time that they had lost. Both employer and employees declared that they agreed to this settlement because of a feeling of patriotic duty. The Canadian Pacific and its complaining telegraphers have agreed to accept the award of the government Conciliation Board in the matter of the operators' recent request for increase in pay. Agents and operators receive 18 per cent increase and despatchers 12 per cent.

A plan proposed by a committee of the Association of American Railway Accounting Officers for a modification of some of the accounting and statistical requirements of the Interstate Commerce Commission and state commissions, for the purpose of saving clerical man-power during the war, was discussed at a conference held in Washington on October 4 of members of the committee and of the federal commission and the National Association of Railway Commissioners. The representatives of the Interstate Commerce Commission, M. O. Lorenz, statistician, and F. W. Sweney, chief examiner of accounts, were inclined to assent to most of the proposed changes with some modifications, but the representatives of the state commissions could not commit themselves to an assent to the proposals. An outline of the plan was published in last week's issue in connection with the report of the accounting officers' convention.

Pennsylvania Takes \$5,000,000 in Liberty Bonds

At a meeting of the Board of Directors of the Pennsylvania Railroad Company in Philadelphia, Wednesday, it was decided to subscribe, on behalf of the company, for \$5,000,000 worth of Second Liberty Loan Bonds. Other large subscriptions by various railroads are given on a previous page.

Headlight Complaint Dismissed

Arguments were heard before Judge Anderson of the United States District Court for the district of Indiana at Indianapolis on October 9 on a motion of the United States government to dismiss a complaint filed by the New York Central about three months ago to restrain the government and the Interstate Commerce Commission from enforcing the commission's order requiring the use of high power locomotive headlights. The court granted the motion to dismiss the complaint.

Germany Plotted Destruction of Railroad

Despatches indicating that the German general staff had planned the destruction of the Canadian Pacific Railway line at important points have come into the possession of the State Department. Secretary of State Lansing on Wednesday gave out a copy of a secret message dated January 3, 1916, from Zimmerman, who was then in charge of the German foreign office, to Count von Bernstorff, the German ambassador to this country, including the following instructions: "General staff desires energetic action in regard to proposed destruction of Canadian Pacific Railway at several points with a view to complete a protracted interruption of traffic." Count von Bernstorff was also instructed to provide the necessary funds.

National Railway Appliances Convention to Be Held

The officers of the National Railway Appliances Association have issued an announcement that it is the intention of that association to hold its tenth annual exhibition at the Coliseum and Annex, Chicago, March 18 to March 21, 1918.

The annual exhibition of the National Railway Appliances Association has been held each year in Chicago at the same time as the March meetings of the American Railway Engineering Association, the Railway Signal Association and the Association of Railway Telegraph Superintendents.

With the announcement that the meeting is to be held are sent application blanks for space. Applications for space must be filed in the office of the secretary-treasurer, 122 Michigan avenue, Chicago, not later than November 1.

Railway Returns for August

The Interstate Commerce Commission has made public its partial summary of railway returns for August, giving figures for 153 roads operating 192,397 miles. While operating revenues increased from \$1,357 per mile in August, 1916, to \$1,518 in August, 1917, the operating expenses per mile show an increase from \$855 to \$1,026 so that the net revenue was reduced from \$502 to \$492. While the southern roads show a slight increase in net the eastern and western roads show a reduction. For the eight months total revenues per mile were \$10,839, as compared with \$9,673; expenses, \$7,677, as compared with \$6,493, and net operating revenues were \$3,162, as compared with \$3,180 in 1916. The eastern roads are considerably behind the average for last year in net while the southern and western roads both show increases.

Conductor Sharp

Conductor E. S. Sharp, of the Yazoo & Mississippi Valley, showed tactfulness and high efficiency in the handling of a recent case. A woman and four children boarded his train at Tchula by mistake, both the conductor and the flagman being, just then, engaged in other duties. When Mr. Sharp found the lady and children on his train, he saw that there was nothing to do but carry them on to Greenwood (24 miles), where they could be made comfortable (for six hours), and send them back to Tchula on train No. 313. This he did and the lady seemed perfectly satisfied. She even went so far as to say that she did not blame anybody for the mistake but herself; and while she was in that humor, Mr. Sharp thought it would be a very good time to pay her a small amount and take her full release of the company, which he did. The release was sent in to the claim department and Mr. Sharp was promptly reimbursed. If no settlement had been made by the conductor, the lady might have changed her mind about who was at fault and brought suit against the com-

pany and caused the entire train crew to waste a lot of time hanging around the court house waiting to be called as witnesses. Conductor Sharp is to be commended.—*Illinois Central Magazine*.

Progress of the Mobilization

Up to Tuesday of this week, the railroads had moved 824,000 soldiers to the various training camps and cantonments or embarkation points. This includes the third increment of the National Army, approximately 25 per cent, or 172,000 men, who were entrained at local concentration points from October 3 to 7 and this leaves about 30 per cent still to move. The balance of the National Army are to be moved beginning on October 17 and there are still some National Guard units to be moved.

Approximately 2,500 carloads of food and other necessities are being delivered daily by the railroads at the cantonments where the new National Army and the National Guard are being trained for service abroad, according to reports just received by the Railroads' War Board. The task of the railroads is to supply all the necessities of life for 16 non-productive cities of a population of 40,000 each and 56 smaller cities ranging in population from 300 to 3,000. Altogether, more than a million men must have their daily necessities brought to them by the railroads.

U. S. Employment Exchange for Engineers

The employment service of the United States Department of Labor recently created a branch known as the Teachers and Professional Service Division, the function of which is to aid the employer in obtaining suitable help, and professional persons in securing suitable employment. While intended to embrace all professions, attention has thus far been confined to the teaching and engineering professions. Employers, in reporting positions, are asked to state the nature of the position, its duties, requirements, etc., the possible salary and the probable duration of employment. Applicants for registration should indicate in the first letter the nature of the position desired so that the proper blanks may be furnished.

No service is rendered an applicant until the division has learned from persons familiar with him that he is qualified as to training, experience and personal qualities for the position he seeks. When an applicant is recommended for a reported vacancy, the employer is given an opportunity to examine the data gathered in the course of the investigation, thus effectually preparing for the final step, the personal interview, for which ample facilities are provided in the offices of the division. The services of the division are entirely free, the expense being borne by the government. All communications should be addressed: Teachers and Professional Service Division, U. S. Employment Service, 845 South Wabash avenue, Chicago, Ill.

Navigation on the Ohio With Artificial Floods

Coal to the amount of over 150,000 tons has been taken in boats down the Ohio River, from the mines on the Kanawha River, to Cincinnati and vicinity during the past two months by the aid of artificial rises in the river produced by drawing water from the pools formed by the dams above Huntington, W. Va. To create these artificial rises water was released from pools starting at Dam No. 7 near Midland, Pa., thirty-seven miles below Pittsburgh to Dam No. 29 below Catlettsburg, W. Va., and from the Big Sandy and Kanawha Rivers.

This water transportation, introduced to relieve congestion at mines due to shortage of railroad cars, has been arranged by Colonel Lansing H. Beach, Corps of Engineers, U.S.A., Division Engineer, Central Division, Cincinnati, Ohio. From August to December is a period of low water in the stretches of the Ohio River where it has not been brought to the nine-foot stage by means of dams; twenty-one dams have been completed and are in operation between Pittsburgh and Cincinnati and fourteen remain to be completed on this stretch of the river, leaving nearly 150 miles of river difficult to navigate during the low water period.

Previous to September some relief was afforded by releasing one or two pools to permit navigation of boats over shallow reaches of the river. Some systematic scheme, however, was necessary to obtain the maximum use of the artificial rises without interference with ferry and packet boats; and it was necessary to regulate the drawing of water from the upper pools so as to

prevent them from being drained to the extent that they would be put out of commission. A meeting was held by the Army Engineers with representatives of the various river interests, and plans were devised by which artificial rises would be given from the pools at regular stated intervals. These artificial rises were started in August and several have occurred since. One last week brought down four tows with over 40,000 tons of Kanawha River coal. It has been arranged to give three rises a month about the first, tenth, and twentieth, until the fall rains bring on the natural rises during November or December.

The New Jersey Full-Crew Law

The Public Utility Commissioners of New Jersey have been holding hearings for nearly three weeks on the petition of the Central Railroad of New Jersey to reduce the number of trainmen on certain freight trains in accordance with the Act of March 22, 1917, empowering the board, after hearing, to regulate the number of employees on any train. These hearings have now been completed and briefs are being prepared by the railroad company and the Brotherhood of Railway Trainmen for argument October 24, after which it is expected that the petitions of the other railroads in New Jersey will be taken up. The petition of the Central relates principally to trains of comparatively light tonnage, making but few stops and having little or no switching work to perform. The Brotherhood of Railway Trainmen, acting for the employees, has consumed most of the time allotted to these hearings in the submission of reports and the testimony of witnesses tending to show that the trains referred to in the petitions of the railroad company are affected by many causes which render the services of the extra brakeman necessary, such as hot boxes, broken brake beams, draw heads pulled out, broken knuckles, inspection of trains, testing air brakes, etc. A mass of evidence was submitted by the trainmen relating to the amount of work performed by the train crew which has very little, if any, bearing on the question of safe operation or adequate service for the protection of the public or the employee. It now seems likely that the physical characteristics of each railroad, together with their operating rules and practices, their signals and switches will be taken into consideration by the board.

Prior to the passage of the full crew law, in 1913, it was understood that the New Jersey Public Utility Commissioners had power to pass upon the question of adequate service and, in fact, had, in some instances, issued orders relative to the manning of trains. It had also thoroughly investigated the subject of manning trains and made a report to the Senate, so that upon completion of the present hearings it will be in possession of specific data to enable it to approve or disapprove the manning of trains as suggested by the railroad companies.

Coal Situation

Denial of reports of a coal shortage in Washington, D. C., or of a general shortage in Eastern points, either present or prospective, was made on October 5 by Fuel Administrator Harry A. Garfield. There is not now enough coal in Washington for the winter, he said, but the quantity needed will be supplied after navigation closes on the Great Lakes on November 15. "Shipments to the Great Lakes are being given preference in order to provide sufficient coal for the Northwest before the close of navigation," according to the statement. "This is necessary in order to prevent shipment of coal all rail to the Northwest after the close of navigation, thus sending cars out of service, which would result in an actual car shortage. The Eastern sections of the country are being supplied with sufficient coal for necessary requirements, but increased shipments are not being made for storage purposes because all surplus coal is being shipped to the lakes for Northwest delivery from the docks. As soon as navigation closes on the lakes such shipments will be diverted to Eastern points and distributed according to need; and we anticipate there will be sufficient coal available for necessary requirements."

"The matter of prompt movement of coal cars is now receiving consideration and it will undoubtedly be necessary to give them preference in movement, both loaded and empty, over other slow freight. This will provide additional cars, which should result in increased production sufficient for all necessary purposes."

One of the most important problems now being considered by the Fuel Administration is that of insuring an adequate supply of

fuel coal for the railroads. Many roads have not been able to contract for their full supply and have had to meet their requirements by furnishing cars on certain days only for railroad coal. This subject has been taken up by E. E. Clark of the Interstate Commerce Commission, Fuel Administrator Garfield and R. S. Lovett, priority commissioner, and also has been the subject of conferences between representatives of the Division of Car Service of the Interstate Commerce Commission, the Commission on Car Service and the coal interests. An order from Mr. Garfield prescribing a method of apportioning coal to railroads is expected this week.

The Fuel Administrator on October 7 issued some new regulations, in one of which it is held that coal confiscated by railroads for their own use may be purchased from the owner at the price under which it was consigned when confiscated, if this is not above the figure set by the President. Exception must be made when it has been consigned under a contract that would stand in court, made before the presidential order, in which case the railroad must pay the higher figure if it wants the coal. Another regulation directs that the product of "wagon mines" be shipped in box cars, when it is sent to the general market by rail, thus saving the open cars for the use of mines where the loading can be done most quickly. Where box cars are used by wagon mines a charge of 75 cents per ton, in addition to the President's prices, is permitted to cover the cost of hauling and loading.

Coal miners and operators of western Pennsylvania, Ohio, Indiana and Illinois have appealed to Mr. Garfield to increase coal prices at the mine, fixed in President Wilson's orders, to permit the wage advances agreed upon on October 6 in a conference that began at Washington on September 25.

The weekly report of the Geological Survey on coal production shows that 192,720 carloads of bituminous coal were hauled from the mines by 144 coal-carrying roads during the week ending September 29, the best week since July 28, but the percentage of production to mine capacity was reduced. "Troop movements, congested traffic and disturbances in the labor force at the mines appear to be responsible for the sudden drop in coal production during the week which ended September 22," says the statement. "For all mines reporting the causes of lost time, due to car shortage, increased from 9.8 to 10.5 per cent of the full time capacity, the most acute shortage for many weeks. In the same time losses due to labor shortage increased also."

Meeting of Telegraph Superintendents

A special meeting of the Association of Railway Telegraph Superintendents will be held at the La Salle Hotel, Chicago, on November 22. At this meeting it is proposed to consider the following subjects:

1. Brief progress reports from the different special committees. Committees will meet at the hotel on November 21.
2. Conservation of telegraphing and telephoning in connection with both commercial and railroad wires. A special committee is expected to report on this subject.
3. Shortage of operators and plans for schools to teach operators. A special committee will report.
4. Emergency use of wire facilities in the operation of railroads to meet the present war situation.

Car Foremen's Association of Chicago

At the annual meeting of the Car Foremen's Association of Chicago, which was held at the Hotel Morrison, Chicago, on October 8, the following officers were elected: President, H. H. Estrup, general foreman, Chicago & Eastern Illinois; first vice-president, E. G. Chenoweth, mechanical engineer, Rock Island Lines; second vice-president, M. F. Covert, assistant master car builder, Swift & Co.; treasurer, F. C. Schultz, chief interchange inspector, Chicago Car Interchange Bureau; secretary, Aaron Kline.

Western Railway Club

The next meeting of the Western Railway Club will be held at Hotel Sherman, Chicago, on October 15. Samuel O. Dunn, editor of the *Railway Age Gazette*, will make the opening address, and H. T. Bentley, superintendent of motive power and machinery of the Chicago & North Western, will read a paper on Locomotive Terminal Delays.

Better Business Correspondence Convention

The belief that much business correspondence is not all that it ought to be has led to the calling of a convention to discuss the subject of better business correspondence at Worcester, Mass., October 15 and 16. The meeting will be held in the assembly hall of the Norton company at Worcester, and at the meeting recognized experts in business correspondence for a number of large companies will exchange ideas on the subject through written papers and informal discussion.

The two important subjects to be brought up deal, respectively, with the writing of the letter and its transcribing, it being believed that too many letters are ineffective and that the methods of dictating and transcribing are wasteful.

It is hoped to make this meeting the first of a number of such meetings, so an organization will be perfected and permanent officers elected.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next meeting, October 16-17, St. Louis.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 16-18, 1917, Chicago.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.
- BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—Tom Lehon, The Lehon Company, Chicago. Meetings with American Railway Bridge and Building Association.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Morrison Hotel, Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 568 Union Arcade Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—F. W. Hager, Fort Worth & Denver City, Fort Worth, Tex. Next convention, October 16-18, 1917, Cleveland, Ohio.
- NATIONAL ASSOCIATION OF RAILWAY COMMISSIONERS.—Jas. B. Walker, 120 Broadway, New York City. Next annual convention, October 16, 1917, Washington, D. C.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—Geo. A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.
- PACIFIC RAILWAY CLUB.—W. S. Wollner, Assistant to Chief Engineer, Northwestern Pacific R. R., San Francisco, Cal.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.
- RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial Annex Hotel, Pittsburgh.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, N. & W., Philadelphia, Pa. Next annual convention, October 16-18, St. Louis, Mo.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 a. m., Piedmont Hotel, Atlanta.
- TRAFFIC CLUB OF CHICAGO.—C. B. Signer, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.
- WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.
- WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, Acting Secretary, 1735 Monadnock Block, Chicago, Ill. Regular meeting, first Monday in month, except January, July and August. Extra meetings generally on other Monday evenings except in July and August.

Traffic News

At Winnipeg, October 4, it was announced that both the Canadian Pacific and the Canadian Northern had placed an embargo on all shipments of grain to Fort William and Port Arthur.

Embargoes imposed by the Great Lakes Transit Corporation have made it necessary to prohibit the acceptance of freight by boat on the Erie Canal between Albany and Buffalo.

Paul M. Ripley, who resigned as assistant to president of the El Paso & Southwestern in June, has been appointed traffic manager of the American Sugar Refining Company, with headquarters at New York.

To avoid disastrous depletion of herds of cattle and sheep in Western Canada, the government is arranging with railroads of the dominion to carry breeding animals westward at reduced rates, or, in some cases, free, the government bearing a part of the burden.

The Senate on October 5 passed a bill, which had previously passed the House, giving the United States Shipping Board power to suspend present provisions of law for the purpose of permitting vessels of foreign registry and foreign built vessels admitted to American registry to engage in the coastwise trade during the war and for a period of 120 days thereafter, except the coastwise trade with Alaska.

Columbia University, New York City, now maintains an "extension school" at 203 Broadway, in the heart of the business district, where courses are given in railway traffic and rates by Professor T. W. Van Metre and on ports and terminal facilities by R. S. MacElwee. These classes are held between 5 p. m. and 7 p. m. and the fee is \$18 each. There is also a course on theory and practice of ocean transportation, at the same price; also other courses on commercial topics.

The Canadian Pacific has presented at Washington a strong protest against the embargo which was placed by the United States Government on shipments of coal to Canada, declaring that at the present rate the railroad will be in danger of a short supply of coal for its locomotives; locomotives which are engaged in moving American military supplies both to Atlantic and Pacific ports. It is said that these supplies are being sent both to Halifax and to Vancouver, because of the congestion at ports in this country.

A further saving of 96,772 tons of coal per annum, 30 locomotives and 114 men has been effected by reductions in passenger train service on the railroads traversing the 15 central states designated by the Secretary of War as the "Central Department." The total saving of man power, fuel and locomotive power on these railroads in the 15 states from Ohio to Colorado, by passenger train service reductions, is 1,086,171 tons of coal per annum, 203,097 barrels of fuel oil, 350 locomotives and 1,774 men.

The United States Department of Agriculture has issued a circular to farmers, showing what they can do to help in the movement of freight. They are reminded that the transportation situation is still serious, and that cooler weather makes refrigeration less necessary, and makes it possible to run more commodities under ventilation and to load cars more heavily than during the summer. Patriotism demands of farmers and everybody the heaviest loading possible consistent with the safe carriage of the goods.

PASSING OF THE ALLAN LINE.—It is announced that from July 1 the Allan Steamship line loses its separate identity and is merged in the Canadian Pacific Ocean Services. Dating from the heroic days of early steam navigation the Allan line has been a vigorous pioneer in the development of the Trans-Atlantic trade, and especially in the development of Canadian trade with the mother country.—*American Express Bulletin.*

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The Interstate Commerce Commission has announced that hearings in the eastern commodity rate case will begin at Washington on November 1 before Examiner Disque.

The Commission has announced hearings at Chicago before Examiner Disque to be held on November 16 in the eastern livestock-fresh meat case, and on November 21 in the eastern grain case.

The Commission has suspended from October 11 to February 8 the operation of certain rates in Agent M. P. Washburn's tariff providing for the cancellation of joint through carload rates on grain and grain products from East St. Louis, Ill., via the Baltimore & Ohio and Louisville, Ky., to Tampa and other points in Florida.

The commission has suspended until February 7, Chicago & North Western, Chicago, Milwaukee & St. Paul, Great Northern, Minneapolis & St. Louis, Minneapolis, St. Paul & Sault Ste. Marie and E. B. Boyd's tariffs, naming increased carload rates on potatoes from Wisconsin, Minnesota, Upper Michigan, North Dakota, South Dakota and Iowa, to interstate destinations. The proposed rates are from 1 to 13 cents per 100 lb. higher than those now in effect.

The Commission has made public the tentative report of Examiner Disque in the livestock classification case, in which it is held that proposed ratings on livestock, less than carload, in Official Classification and Southern territories have not been justified. The roads, however, are authorized to establish new minimum weights and ratings. In view of the amended Cummins amendment carriers in Official Classification territory are required to cancel schedules which provide rates on ordinary livestock dependent upon value.

STATE COMMISSIONS

The Illinois Public Utilities Commission has this week authorized a general increase of 15 cents a ton in freight rates on coal and coke.

The Public Utilities Commission of Colorado, in a decision issued September 25, has authorized the Denver & Salt Lake to increase its local passenger fares from 4½ cents a mile to 5 cents; round trip fares to be at a rate ten per cent less than this. The road is in the hands of receivers and has had very poor traffic for several years; but the commission requires that mileage books at \$30 for one thousand miles, good for the holder and any member of his immediate family, shall be continued in use.

The construction of telegraph and other wire lines across railroad lines, or over or under the facilities of any public service company, is the subject of a pamphlet of 172 pages which has been issued by the Public Service Commission of Pennsylvania. Seven sets of specifications are given, for different classes of work; and in appendices filling about 100 pages—nearly two-thirds of the book—there are a number of chapters containing all sorts of detail information, including drawings, diagrams and tables. The pamphlet is called General Order No. 13, and it says that crossings conforming to the requirements may be constructed without any special permit from the commission, provided notice is seasonably given to the company whose facilities are to be crossed.

PERSONNEL OF COMMISSIONS

Lester Sisler, until recently chief clerk of the Interstate Commerce Commission, has been appointed secretary of the United States Shipping Board. He was recently appointed assistant secretary.

COURT NEWS

Delivery of Goods

The New Mexico Supreme Court holds, in an action for conversion by a consignee, that a railroad company is not estopped to deny delivery by reason of the fact that its agent mailed to the shipper a postal card, on a printed form supplied by the shipper, stating that the goods had been delivered, where subsequent communications between the shipper and the consignee showed there had been no delivery.—*Levers v. Atchison, T. & S. F. (N. M.)* 166 Pac. 1178. Decided July 30, 1917.

State Commission's Power to Refuse Permission to Issue Bonds

The Missouri Supreme Court holds that an order of the Missouri Public Service Commission refusing permission to the Union Pacific, a Utah corporation owning 3,500 miles of road and \$300,000,000 worth of property, only \$3,000,000 of which is in Missouri, and only 1,000 feet of track, to issue bonds for rolling stock and other betterments, would not be "reasonable and lawful," as required by Section III of the Missouri Public Service Act.—*P. S. C. v. U. P. (Mo.)* 197 S. W. 39. Decided June 30, 1917.

Recovery of Freight Charges Overpaid by One Road to Another

Action was brought by the Mobile & Ohio against the Washington & Choctaw to recover money paid by the plaintiff to the defendant on a claim by the latter that it was entitled to a division of the freight on certain lumber shipments. The two railroads had a joint tariff providing a through rate for shipments of lumber originating on the defendant's line, but providing no through rate permitting such shipments to be stopped at the junction point, and there dressed and then forwarded. On lumber so stopped the defendant collected from the original shipper the local rate to the junction point, but demanded and received from the plaintiff a portion of the freight from the junction point to destination, the rate in force on such shipments being the same from the junction point as from the point of origin on the defendant's line. The Federal district court for the Southern District of Alabama holds that the plaintiff was entitled to sue for the payments so made, though they were voluntary, and though in making and receiving them both railroads were guilty of unlawful acts, as the plaintiff was damaged by such payments, and the statute is not limited to the regulation of contracts between shipper and carrier.—*Mobile & Ohio v. Washington & Choctaw*, 242 Fed., 531. Decided May 19, 1917.

Carrier's Liability as Warehouseman

A railroad company, as the last connecting carrier, received a carload of copper ingots, shipped under a bill of lading providing that "property not removed by the party entitled to receive it within 48 hours . . . after notice of its arrival . . . may be kept in car . . . or warehouse subject to a reasonable charge for storage and to carrier's responsibility as warehouseman only." The company's tariff, duly filed and posted, provided that, "when delivery of cars consigned or ordered to private industrial spur tracks cannot be made on account of the act, neglect, or inability of the consignee to receive them, delivery will be considered to have been made when the cars are tendered." On arrival of the car the private track of the consignee was fully occupied, and the railroad left the car on its connecting side track, and notified the consignee that the car was at its disposition, subject to the payment of a demurrage charge. Six days later the consignee paid the demurrage charge and the car was moved to its track, when it was found that one of the seals was broken and that a part of the copper was gone, although, when inspected by the railroad's yard watchman, the evening before, the seals were secure. In an action for the value of the copper lost, the Circuit Court of Appeals, Eighth Circuit, holds that the railroad's liability was that of warehouseman only, and under the rule of the federal courts a warehouseman is liable only for negligence, the burden of proving which rests on the party alleging it, and is not shifted by proof merely of loss or destruction of the property in the charge of the warehouseman. Judgment for the railroad was affirmed.—*United Metals Selling Co. v. Pryor*, 243 Fed. 92. Decided July 9, 1917.

Equipment and Supplies

LOCOMOTIVES

THE RED RIVER & GULF is inquiring for 2 locomotives.

THE CHILEAN GOVERNMENT is inquiring for a number of Mikado locomotives.

THE BRITISH GOVERNMENT is reported as inquiring for 70 ten-wheel locomotives for the Egyptian State Railways.

THE UNION MINIERE DU HAUT KATANGA has ordered 4 six-wheel tank locomotives from the American Locomotive Company. These locomotives will have 10 by 16 in. cylinders and a total weight in working order of 48,000 lb.

CENTRAL OF GEORGIA.—Vice-president L. W. Baldwin on September 27 announced that this company is preparing an order for rolling stock to cost approximately \$2,500,000, viz.: 13 locomotives (10 Mallet type and 3 passenger), \$100,000 each, \$1,300,000; 14 passenger cars (12 day coaches, 2 parlor cars), \$20,000 each, \$280,000; 700 freight cars (200 stock and 500 ventilation), \$1,200 each, \$840,000.

FREIGHT CARS

THE WESTERN PACIFIC is inquiring for prices on 1,500 freight cars.

THE NEW JERSEY LINE COMPANY is reported as inquiring for 50 gondola cars.

THE BANGOR & AROOSTOOK has given the Laconia Car Company an order for 150 box cars.

THE PETROLEUM REFINING COMPANY, Houston, Tex., is inquiring for 50 8,000-gal. capacity tank cars.

THE RUSSIAN GOVERNMENT is receiving quotations on a new inquiry for 10,000 four-wheel freight cars.

THE INDIANOMA REFINING COMPANY, St. Louis, Mo., is inquiring for 75 to 100 8,000-gal. capacity tank cars.

THE ELGIN, JOLIET & EASTERN reported in last week's issue as building a number of freight cars in its own shops, will build 500 gondola cars.

THE UNITED STATES GOVERNMENT is reported as having placed additional orders for 4,800 narrow-gage cars for the use of the forces overseas as follows: American Car & Foundry Company, 1,800; Pressed Steel Car Company, 1,000; Standard Steel Car Company, 1,000, and Ralston Steel Car Company, 1,000.

PASSENGER CARS

THE ILLINOIS CENTRAL has ordered 25 coaches, 15 baggage cars and 5 combination passenger and baggage cars from the Pullman Company.

SIGNALING

THE ATLANTA & WEST POINT has ordered from the A. G. A. Railway Light & Signal Company, Elizabeth, N. J., 91 flashlight equipments for its automatic block signals. These lights will be installed by the railroad. An order has also been given by the Missouri Pacific for four signal lighting equipments of a similar type, to be installed at Osage City, Mo. Orders for A. G. A. crossing signals have been received from the following roads: Atlanta & West Point, one flashlight signal of the double-arm type; Philadelphia & Reading, two of the single-arm type, which have been installed on the Atlantic City division at Richland, N. J.; Union Traction Company of Indiana, one for installation at Indianapolis. The A. G. A. company has also received an order for one coach lighting equipment from the Chesapeake Beach Railway.

Supply Trade News

The International Oxygen Company, 115 Broadway, New York, announces the resignation of P. J. Kroll as the company's representative for Pittsburgh and middle western territory.

The MacLeod Company, Cincinnati, manufacturers of sand blast equipment and metallurgical furnaces, in order to take care of its expanding business, will enlarge its plant and increase its capital to \$100,000.

Fayette H. Reed has been appointed special agent of the Acar Manufacturing Company, New York, covering the states of California, Nevada, Oregon, Washington, Arizona, New Mexico and Utah, with office at San Francisco, Cal.

William S. Bostwick and Chester A. Lyon, formerly with the Magnus Company, Inc., Chicago, announce the formation of the Bostwick-Lyon Bronze Company, of Waynesboro, Pa., and that they have taken over the entire plant of the Waynesboro Foundry & Machine Company, and have fully equipped it as a modern foundry for the manufacture of brass castings, journal bearings and babbit metal.

The A. G. A. Railway Light & Signal Company, Elizabeth, N. J., has received an order from the Atlanta & West Point for 91 flash light equipments for automatic block signals. The equipment will be installed by the railroad. An order has also been received from the Missouri & Pacific for four signal lighting equipments of a similar type, to be installed at Osage City, Mo. Orders for crossing signals have been received from the following roads: Atlanta & West Point, one grade crossing flash light signal of the double arm type; Philadelphia & Reading, 2 grade crossing signals of the single arm type, which have been installed on the Atlantic City division at Richland, N. J.; Union Traction Company of Indiana, one flashing highway danger signal for installation at Indianapolis. The company has also received from the Chesapeake Beach Railway an order for one coach lighting equipment.

Burwell S. Cutler Made Chief of Foreign Commerce Bureau

The appointment of Burwell S. Cutler, of Buffalo, as Chief of the Bureau of Foreign and Domestic Commerce, Department of Commerce, was confirmed by the Senate October 5. Mr. Cutler, who is well known in manufacturing circles in western New York, came into the Bureau six months ago at a nominal salary to assist in putting the organization on a thoroughly business basis. He was made first assistant chief, but since the resignation of Dr. E. E. Pratt, has been acting chief.

Mr. Cutler was born in Buffalo and finished his scholastic education at Lake Forest University and Harvard. For fifteen years he has been president of an important Buffalo manufacturing concern and has been identified in an official capacity with numerous business houses and civic organizations throughout New York State.

Westinghouse Air Brake Company

The recently issued annual report of the Westinghouse Air Brake Company for the fiscal year ending July 31, 1917, shows a net profit for the year, after the usual charges and after setting up adequate reserves to cover estimated tax requirements and other contingent liabilities, of \$6,388,463 as compared with \$9,396,103 in 1916 and \$1,575,839 in 1915. While the volume of brake business this year exceeded that of the previous year by 20 per cent, the net income from this source suffered a slight reduction. On the other hand, income from investments this year exceed \$900,000, as compared with \$500,000 last year, and a substantial contribution to the final result came through the munition business now definitely concluded.

President H. H. Westinghouse in his statement to the stockholders says in part:

"The business of your company for the fiscal year under review closely reflects the general condition of affairs, with which you are familiar. While the volume of business has been large, the difficulty of securing adequate labor and sufficient material

has been and remains acute; prices paid for supplies of all kinds have advanced so far beyond previous quotations that experience in forecasting the future has been of little avail; and taxation is unprecedented.

"Prior to April 1, 1917, it was a matter of some pride that during the preceding twenty-five or thirty years the Westinghouse Air Brake Company, by reason of large purchases of raw material when the markets were favorable, and through the continuous improvement of its manufacturing methods, had never been compelled to advance the price of its product to its contract holders. In the face of the conditions that confronted us early in 1917, however, it was found impossible to continue this policy, and all prices have, therefore, been revised so as to afford adequate protection.

"Before the close of the year 1916 the supplementary munition contracts for time fuses referred to in our last annual report were satisfactorily completed. The temporary loading plant at Runyon, N. J., has been sold, and, after consultation with government officials who advised that its facilities would not be required, the fuse loading plant at Providence, R. I., occupied jointly with the American Locomotive Company, has been partly dismantled. This action does not imply any unwillingness on the part of the Brake Company to put its manufacturing facilities and the experience acquired in the production of munitions of war at the service of our own government on any terms the government may nominate. During the interim between our undertaking the manufacture of 3 in. shrapnel complete and the present time, there has been an enormous increase in facilities for doing this class of work by companies normally engaged in the manufacture of munitions. At the same time, the demand for brake apparatus to equip cars and locomotives urgently needed for the transportation of troops and supplies, both here and abroad, has continued to increase in volume and pressure until all of our facilities and every possible effort on our part are required to meet it, and in thus striving to prevent serious delay in the immediate increase of transportation facilities, we believe we are doing more for the successful conduct of the war than we can possibly do otherwise."

Associated companies.—"Of the foreign brake companies in which you are interested, largely through your ownership of a majority of the capital stock of the Westinghouse Brake Company, Ltd., of London, we can report that under the circumstances they are more than meeting expectations. . . . The manufacturing facilities of the French and Russian companies being largely absorbed in the production of munitions of war, our Wilmerding plant has been called upon to supply a large amount of brake apparatus for the cars and locomotives built here for use in France and Russia. While it has been a pleasure to serve our government and our allies in this way, the necessity of conforming to foreign standards has rendered the task more difficult and less profitable than it would have been to produce an equal volume of our standard products."

Locomotive Stoker Company.—"In 1913 your company was instrumental in the incorporation of the Locomotive Stoker Company, formed for the purpose of manufacturing a mechanical locomotive stoker which had been developed by the patentee under the direction of your management. During 1916 the operations of this company were transferred from Schenectady to the old air brake plant in Allegheny, and basing our views on the results so far achieved, we believe that the controlling interest held by your company in the Locomotive Stoker Company will prove to be a profitable investment and that the devices produced by this company will be of great benefit to the railroads of the country. To June 30, 1917, 1,555 stokers were sold and installed, leaving orders on hand sufficient to absorb present facilities during the remainder of the year."

Union Switch & Signal Company.—"At the special meeting of stockholders held on March 15, 1917, which was called for the purpose of voting for or against the ratification of the agreement previously made by your board of directors for the exchange of shares of Westinghouse Air Brake Company stock for not less than 60 per cent of the issued and outstanding shares of Union Switch & Signal Company stock, and for other purposes, the agreement in question was ratified and confirmed by a practically unanimous vote. As a result of this action, the Westinghouse Air Brake Company now holds 9,410 shares of the preferred and 118,375 shares of the common capital stock of the Union Switch & Signal Company, representing about 95.9 per cent of its total capitalization. Under substantially the same management and

direction as that of your own company, the Union Switch & Signal Company has made rapid progress in the rehabilitation of its Swissvale plant, which was partially destroyed by fire on February 10, 1917. It is expected that the new shops, of reinforced concrete construction and exceptionally well designed, will be in full operation by the close of the calendar year. In the meantime, the temporary buildings erected in 1915 for the manufacture of munitions have been utilized to the fullest extent and the company has thus been enabled to meet the immediate requirements of its railroad patrons and in so doing maintain both its organization and its position in the trade. Conducted under many difficulties and without the aid of up-to-date facilities that are essential to economical production, these operations have shown little or no profit, but they have served a valuable purpose and the future outlook is promising."

Business Outlook.—"Current demand for brake equipment exceeds our immediate productive capacity, and, including business booked for export, the value and volume of unfilled orders on hand surpasses the normal figure at this season of the year. Until the question of taxation is finally determined, it is impossible to make any prediction as to the probable financial results of the fiscal period on which we have entered."

The general balance sheet follows:

ASSETS	
Cash	\$3,112,404
Accounts and bills receivable	5,190,658
Inventory	9,075,161
Deferred charges to operation	81,626
Investments in associated companies, etc.	15,622,586
Factories, less reserves for depreciation	6,535,921
Real estate, other than for factories	1,972,353
Patents and goodwill	2,485,850
	\$44,076,559
LIABILITIES	
Accounts payable	\$1,613,885
Accrued liabilities	247,275
Federal taxes estimated	643,134
Contingent liability on acct. of sales, subject to future settlements	335,951
Capital stock	28,868,200
Accumulated funds—	
(1) Sundry reserves	3,719,640
(2) Contingent surplus, excess par value capital stock of Am. B. Co.; over value on books of W. A. B. Co.	1,000,000
(3) Surplus, applicable to dividends	7,648,474
	\$44,076,559

TRADE PUBLICATIONS

A FEW DEVICES—IN FOUR LANGUAGES.—The Q & C Company, New York, has recently issued a catalogue for foreign distribution describing the company's line of railway appliances in four languages, English, Spanish, Russian and French.

LOCOMOTIVES.—The Baldwin Locomotive Works, Philadelphia, Pa., has recently issued Record No. 87 on the subject of military supplies. In this pamphlet is included a description of what the Baldwin Locomotive Works has done for the war, mentioning the Consolidation type locomotive built for the United States government, giving a record of the time in which this locomotive was built.

JOURNAL BOX PACKINGS.—The Franklin Manufacturing Company, Franklin, Pa., has recently issued a 26-page pamphlet on the subject of journal box packings. It contains interesting information on the general subject, explaining the properties of good journal box packings and the results that should be obtained from it. The method of manufacturing the packings sold by this company is described, being supplemented by interesting photographs. The materials used in the manufacture of packing are also mentioned and described. A suggested specification for journal box packings is included. The catalogue contains information of particular interest; it brings out the point that journal box packing is not "waste" and that there is not available sufficient high grade wool waste to supply all the railroads. The number of the catalogue is FC 6-17.

FOREST NURSERY AT URUGUAYAN STATION.—At Toledo, a small station on the Central Uruguayan Railway, the Argentine Government maintains a nursery and either gives away or sells at actual cost very young trees for transplanting. In connection with this forest nursery a poultry culture farm is maintained, which is a center of interest to the surrounding country, and all the well-known American breeds of fowl are prominently displayed in fairly large numbers.

Railway Construction

CUYUNA SOUTHERN.—This company will build a steam line from Deerwood, Minn., to St. Paul. C. Adams, Deerwood, Minn., president.

KINDER & NORTHWESTERN.—The proposed construction of 35 miles of line to connect this road with other local lines, mainly in lumber service, will proceed as soon as approval of the consolidation of the companies involved is received from the Interstate Commerce Commission. Alfred Mead, vice-president, Kinder, La.

MINNEAPOLIS & ST. LOUIS.—This company will award a contract some time this month for the erection of a bridge over the Minnesota river near Carver, Minn. The steel, consisting of six deck-girder spans, weighing 220 tons, was fabricated last year, and the foundation work, consisting of reinforced concrete on piling, is being done by the Widell Company, Mankato, Minn., and is about three per cent completed.

SOUTHERN PACIFIC.—This company has instituted a program of extending every station passing track between Blue Canon, Cal., and Truckee to enable the company to handle trains of 55 to 57 cars instead of 45 as at present. During the last few years over \$12,000,000 has been spent on the construction of second track from Rocklin, Cal., to Blue Canon, and Sparks, Nev., to Truckee, Cal.

Railway Financial News

BOSTON & MAINE.—Federal Judge Morton, of Boston, has directed James H. Hustis, temporary receiver, to pay the interest on \$2,000,000 of notes of the Connecticut River Railroad, a leased line, due August 31 last.

CONNECTICUT RIVER.—See Boston & Maine.

DENVER & RIO GRANDE.—E. L. Brown has been elected director and president to succeed H. U. Mudge, resigned. Kingdon Gould, who is now in military service, has resigned as a director and has been succeeded temporarily by S. N. Rice.

The sum of \$3,064,635.03 has been paid by J. P. Morgan & Co. for Liberty Loan bonds of the first issue of a par value of \$3,032,400 at a public auction sale conducted by Thomas D. McCarthy, United States Marshal, on the steps of the New York County Court House. The purchase price was \$100 more than the face value of the securities plus accrued interest. The bonds were seized by the marshal under a judgment recently obtained against the Denver & Rio Grande by the Equitable Trust Company, as trustee, for upward of \$38,000,000. The amount was for alleged liability of the Rio Grande on a guarantee of a mortgage bond issue of the old Western Railways Company which was foreclosed with a resultant deficiency.

MINNEAPOLIS & ST. LOUIS.—At the annual meeting of the stockholders, F. S. Letts, F. A. Chamberlain and F. E. Kenaston were chosen new directors. The retiring directors have been re-elected.

PERE MARQUETTE.—This company has declared the regular quarterly dividend of 1¼ per cent upon the prior preference stock, payable November 1 to stock of record October 15. This is the second dividend upon this issue and the first at the regular quarterly rate, the former dividend having been for an irregular period following the reorganization of the company.

SOUTHERN RAILWAY.—Augustus D. Julliard and Jackson E. Reynolds, both of New York, have been elected to fill vacancies on the board of directors. The retiring directors have been re-elected.

Railway Officers

Executive, Financial, Legal and Accounting

John Dickie, chief clerk in the treasurer's office of the Chicago, Milwaukee & St. Paul at Chicago, has been appointed assistant treasurer.

B. L. Bugg, general manager of the Atlanta, Birmingham & Atlantic, with headquarters at Atlanta, Ga., has been elected also a vice-president.

M. C. Kennedy, president of the Cumberland Valley, with headquarters at Chambersburg, Pa., has been granted an indefinite leave of absence.

George H. Campbell has been elected president of the Kentucky & Indiana Terminal Railroad, with office at Baltimore, Md., vice H. W. Miller.

E. L. Brown, former president of the Minneapolis & St. Louis has been elected president of the Denver & Rio Grande to succeed H. U. Mudge, resigned. A photograph and a biographical sketch of Mr. Mudge were published in the *Railway Age Gazette* of November 12, 1915, page 900.

G. L. Winlock, auditor of overcharge claims of the New York, New Haven & Hartford at Boston, Mass., has been appointed freight claim agent, with office at Boston, in charge of loss, damage and overcharge claims, succeeding G. Marks, assigned to other duties, and the office of auditor of overcharge claims has been abolished.

Operating

G. F. Gannon has been appointed superintendent of the Savannah & Atlanta, with office at Savannah, Ga., vice J. S. Douglas, resigned.

H. E. McGee has been appointed superintendent of the Parsons district of the Missouri, Kansas & Texas, with office at Parsons, Kan., vice J. L. Walsh, transferred.

M. W. Sullivan, superintendent of the Delaware & Hudson at Plattsburg, N. Y., has been appointed superintendent also of the Napierville Junction Railway, with headquarters at Plattsburg, N. Y.

F. W. Lyons has been appointed trainmaster on the Minnesota division of the Northern Pacific, with headquarters at East Grand Forks, Minn., vice F. M. Smith, granted leave of absence to enter military service.

W. J. Sullivan, chief despatcher of the St. Louis-San Francisco at Birmingham, Ala., has been appointed assistant superintendent of the Willow Springs subdivision, with headquarters at Thayer, Mo., succeeding H. E. Gabriel, who has been relieved to accept service in the United States Army. E. E. Owens succeeds Mr. Sullivan at Birmingham.

N. W. Jones, superintendent of telegraph of the Philadelphia & Reading at Reading, Pa., has been appointed assistant superintendent of the New York division, with office at Reading Terminal, Philadelphia, and L. D. Shearer has been appointed superintendent of the Philadelphia, Reading & Pottsville Telegraph Company, with office at Reading, vice Mr. Jones.

H. C. Oviatt, whose resignation as general superintendent of the Lines West of the New York, New Haven & Hartford was announced in these columns last week, has entered the service of the American International Corporation, division of ship building, and is now in charge of transportation at the corporation's ship building works near Philadelphia, Pa.

J. A. McCrea, general manager of the Long Island, at New York, having been granted an indefinite leave of absence, the position of general manager will be filled by John R. Savage, chief engineer; and L. V. Morris, valuation engineer, will act as chief engineer. W. E. Canning, freight trainmaster at Jamaica, and Ralph Peters, Jr., assistant trainmaster at Jamaica, have been appointed assistant superintendents, assigned to special duties.

Traffic

Frank M. Jordon has been appointed commercial freight agent of the Baltimore & Ohio, with headquarters at Wheeling, W. Va., vice W. H. Eaton, promoted.

Walter A. Carlsen has been appointed general agent of the Missouri, Oklahoma & Gulf, with headquarters at Chicago, to succeed C. E. Christopher, resigned to engage in other business.

R. B. Kinkaid, chief of tariff bureau of the Cincinnati, Indianapolis & Western at Indianapolis, Ind., has been appointed assistant general freight agent in charge of tariffs, and the office of chief of tariff bureau is abolished; F. C. Boorman has been appointed commercial agent, with office at Milwaukee, Wis.

C. W. Galligan, whose appointment as freight traffic manager of the Chicago & Alton was announced in the *Railway Age Gazette* of October 5, was born at Cairo, Ill., in October, 1868. He first entered the railroad service at Cairo in 1885, at the local freight office of the Cairo, Vincennes & Chicago, now the Cairo division of the Cleveland, Cincinnati, Chicago & St. Louis. In 1888, he was transferred to the general freight office of the same road as rate clerk, and in 1889 was promoted to chief clerk in the same office. When the Cairo and St. Louis divisions of the Big Four were consolidated in 1890, he was transferred to St. Louis, Mo., as chief clerk to the assistant general freight agent in charge of the newly formed division. In 1892, he was appointed contracting freight agent, with office at St. Louis, and on August 1, 1895, was appointed general freight agent of the St. Louis, Chicago & St. Paul. In January, 1900, when the latter road was absorbed by the Chicago, Peoria & St. Louis, he was appointed assistant general freight agent, with office at St. Louis. On October 1, 1906, he was promoted to general freight agent, with headquarters in the same city, and on September 15, 1912, went to Chicago, Ill., to become general freight agent of the Chicago & Alton. On May 1, 1916, he was promoted to assistant freight traffic manager, with headquarters in the same city, and on October 1, 1917, was promoted to freight traffic manager, the former position being abolished.

F. Montmorency, assistant general freight agent of the Chicago, Burlington & Quincy lines west of the Missouri river, at Omaha, Neb., has been promoted to general freight agent, with the same headquarters, succeeding H. H. Holcomb, who has been promoted as assistant freight traffic manager, with headquarters at Chicago.

George C. Conn, freight traffic manager of the Pere Marquette at Detroit, Mich., has resigned, effective November 1, to become associated with the Buick Motor Company, Flint, Mich. Except for five years, when he was general freight agent of the Minneapolis, St. Paul & Sault Ste. Marie, Mr. Conn has been with the Pere Marquette for 20 years.

J. C. Hext, freight soliciting agent of the Southern Railway at Charleston, S. C., has been promoted to commercial agent at Charleston, succeeding E. M. Ramsey, resigned to enter military service, and A. B. Hammond, traveling freight agent at Charlotte, N. C., has been promoted to commercial agent at Athens, Ga., succeeding H. E. Williams, resigned to enter military service.

F. E. Hollingshead, general agent of the Chicago, Burlington & Quincy at Hannibal, Mo., has been promoted to assistant general freight agent, with headquarters at St. Joseph, Mo., succeeding A. L. West, deceased. T. L. Lawrence, general agent at Atchison, Kan., has been transferred to Hannibal, to succeed Mr. Hollingshead. E. L. Speer, commercial agent at St. Joseph, succeeds Mr. Lawrence as general agent at Atchison.



C. W. Galligan

Engineering and Rolling Stock

H. R. Voelker, foreman in the shops of the Pennsylvania Lines West at Bradford, Ohio, has been promoted to general foreman in the shops at Louisville, Ky.

Henry C. Eich, whose appointment as superintendent of motive power of the Chicago Great Western, with headquarters at Oelwein, Ia., was announced in the *Railway Age Gazette* of September 28, was born in Chicago. On January 2, 1883, he entered railway service as an office boy in the general offices of the Illinois Central at Chicago, and subsequently became machinist apprentice in the Weldon shops, Chicago. He was then successively machinist in the Weldon shops, locomotive fireman, gang foreman at the Burnside shops, general and roundhouse foreman at Freeport, Ill., division general foreman at Louisville, Ky., and master mechanic at East St. Louis, Ill., Memphis, Tenn., and at the Burnside shops at Chicago. He held the latter position until his appointment as superintendent of motive power of the Chicago Great Western on October 1.



H. C. Eich

Special

J. B. Morecock is now secretary of the fire prevention committee of the Seaboard Air Line, with headquarters at Norfolk, Va.

Railway Officers in Military Service

H. E. Gabriel, assistant superintendent of the Willow Springs subdivision of the St. Louis-San Francisco at Thayer, Mo., has resigned to enter military service.

F. M. Smith, trainmaster of the Minnesota division of the Northern Pacific, at East Grand Forks, Minn., has been granted leave of absence to enter military service.

E. M. Ramsey, commercial agent at Charleston, S. C., and H. E. Williams, commercial agent at Athens, Ga., of the Southern Railway, have resigned to enter military service.

B. M. Lockard, assistant engineer in the engineering department of the Chicago & North Western, has received a commission as captain in the Engineer Officers' Reserve Corps.

The President's nomination of W. W. Atterbury, director general of transportation for the U. S. expeditionary forces in France, for appointment to the rank of brigadier general, was confirmed by the Senate on October 4.

C. D. Symes, signal inspector of the Duluth, Winnipeg & Pacific at Virginia, Minn., has received a commission as first lieutenant in the engineer corps of the United States Army and is now stationed at Fort Leavenworth, Kan.

OBITUARY

Robert H. Large, coal traffic manager of the Pennsylvania Railroad at Philadelphia, Pa., died on October 8, at the University Hospital, Philadelphia. He was born on October 31, 1875, at Philadelphia, and entered the service of the Pennsylvania Railroad in 1895 as a rodman in the maintenance of way department. He subsequently served in various clerical positions in the freight department, then as freight solicitor and later as special agent. In June, 1903, he was appointed division freight agent of the Pennsylvania Railroad at Altoona, and in February, 1905, became coal freight agent. He was appointed general coal freight agent in May, 1910, and since May, 1916, was coal traffic manager.